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O R,

SELECT PAPERS

O N

AGRICULTURE, || ARTS, AND
COMMERCE, || MANUFACTURES.

DRAWN FROM EXPERIENCE,

A N D

Communicated by GENTLEMEN engaged in
these Pursuits.

Revised and Digested by several MEMBERS of the SOCIETY for the
Encouragement of ARTS, MANUFACTURES, and COMMERCE.

VOLUME THE FOURTH.

Hæ tibi erunt Artes.

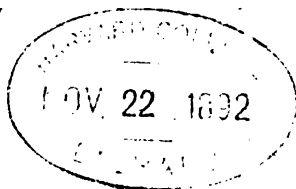
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Museum Rusticum, &c.

For JANUARY, 1765.

VOLUME the FOURTH.

NUMBER I.

Some Proofs why adding Farm to Farms is detrimental to the Nation in general.

GENTLEMEN,

AS much has been said concerning the high price of provisions, and the occasion of it, I shall offer my mite to the public, through the channel of your useful and entertaining work, and endeavour to point out the real cause of this growing evil.

I am the more encouraged to do this, because his Majesty shews such a desire to prevent his subjects from feeling the effects of hunger and want, at this time, when we have been blessed with plentiful crops and a fine harvest; and in the course of this letter shall prove that there is a worse evil than London engrossers, which is the occasion of the present dearness of provisions, namely, that infamous practice* of adding farm to farm; which is put

VOL. IV. No. 17.

B

in

* Does not our correspondent rather go too far in calling this practice infamous? for, as the law now stands, a landlord has an

in practice by too many gentlemen in this nation, to the great hurt of the kingdom in general.

The first useful article that I shall instance it in shall be butter, which, before this pernicious practice became so common, was at a moderate price.

I very well remember, that within these twenty years it sold at Coventry at eight and ten pence a quart in the spring and summer, and in the winter twelve or fourteen pence was reckoned a great price, it being oft at ten-pence at that season; and yet tea-drinking was as much in vogue then as it is now; and people used full as much butter in their sauce and pies as they do now; and the town was, I believe, as full of inhabitants as at this present moment, although it sells now in summer commonly at eighteen and twenty pence a quart, and in winter at two shillings and half a crown*; a surprising advance, which is chiefly owing to fewer people coming to market with butter, occasioned by the number of little farms, that were wont to produce this article, being added to others, so that where there used to be four or five farms that made butter for market, there is not now above one or two; yea, even in some places, one over-grown farmer has engrossed a whole lordship, or parish, to the amount of five hundred or a thousand acres of land, upon which, if he does keep a dairy, he sends but little butter to market, by reason his chief dependence is then upon cheese; for, in that case, if he was to sell butter, he would hurt his cheese: therefore, although there may be as many cows kept when it is in one farm as there were when it was in many, yet not one half of the butter comes to market as formerly did; neither are half the quantity of pigs kept, which also causes them to be now at five shillings and five
and

an undoubted right to let to one man as many acres as he pleases: the practice therefore cannot be infamous, though it may be impolitic and hurtful. E.

* Every necessary of life is now dearer than it was twenty years ago, but in very few places in so large a proportion as that mentioned by our correspondent: twenty *per cent.* is a large advance; what then must *cent. per cent.* be? E. N.

and six-pence a score, when they used to be (not many years ago) at three shillings and three and six-pence.

Thus the adding farm to farm is the sole reason why butter is so much dearer than it used to be; and thus the poor cobblers wives are cleared from being the occasion of it; for how can twenty cobblers wives (and more are but in few towns) raise the price of butter by their drinking a little tea twice a day? What they consumed would make no great alteration; but when twenty little farms, that each used to send butter to market, and feed pigs with the milk, are now (because landlords think much to keep the houses in repair) all laid into one, this occasions both butter and bacon to be at the high price we now see it.

Well, but although this advances the price of butter and bacon, one would be apt to think that it would lower the price of cheese, which is as useful an article as the others: no; but, on the contrary, adding farm to farm is the occasion of this staff of life advancing in price so shamefully: although we have had the finest season for making it that ever was known, and the most made that ever was remembered, perhaps, in any one year; yet it now sells from twenty-five shillings *per* hundred weight to thirty shillings, whereas, twenty years ago, cheese was thought to be dear if it fetched eighteen shillings *per* hundred, and fourteen shillings was the common selling price; and all this is occasioned by our having fewer farmers than usual.

When the little farms were plenty, those that sold butter commonly made some cheese to sell, which, although not so good as that made in large dairies, yet served to keep down the price of the other sorts; for as it commonly came into market, the price for which it sold was known to most; whereas the great farmers seldom bring any to market, but sell all to the factor, who often bargains for so much *per* hundred, out of which the farmer is to return him so much, which gives him room to sell at so much more *per* hundred again.

B 2

Thus,

Thus, by gentlemen adding farm to farm, all necessary articles of life are raised, common people are ruined, and the country depopulated.

That this is the occasion of the high price of all sorts of grain, after so plentiful and fine a harvest, is beyond dispute; although I allow, that the very great progress which has been made in enclosing of late years, may contribute much to hurt the poor, advance the price of corn, and depopulate the country*; yet this grievance is not to be compared to that of landlords making large farms; for whoever rents an estate of four, five, or six hundred a year, it is generally kept in grazing; and it but seldom happens (especially in this county) that any great quantity of such large farms is kept in tillage, because that is a laborious and troublesome employment, whereas grazing is more genteel, pleasant, and easy.

For instance, five hundred pounds a year in grazing may be managed with three servants only; whereas, was such a farm to be occupied in tillage, three-score men and maids would not be sufficient.

I know one who rents above one thousand pounds a year, upon all which he does not keep ten men†. Now, suppose this was to be divided into twenty farms, at fifty pounds a-piece, (and they would be such as were called tolerable-sized ones when I was young) what a multitude of subjects would they produce! and what quantities of butter, cheese, bacon, and corn would be sent to market, to what now are!

Thus adding farm to farm does not only cause all useful articles of life to advance in price, by fewer sellers being

* Our correspondent in this place differs widely in sentiment from many, who think that enclosing is of public benefit, making corn cheap, and contributing to encrease the number of inhabitants; and, indeed, we are ourselves inclined to this last opinion, provided the enclosures are kept under tillage, and not laid down for grazing or dairy farms. E. O.

† We are, with many others, of opinion, than an Agrarian law, limiting the number of acres which any one man should rent, would greatly promote the improvement of our agriculture, and could not fail enriching the nation. E.

being in market than usual, but it also helps to depopulate the country, and fill great towns with poor.

Less than twenty years ago, the poor's levy at Birmingham was under nine hundred pounds *per* year; and now, I am informed, it is upwards of four thousand pounds *; and what owing to, but because those children, which used to be bred up for farmers places, are now set out to trades which take them for little or nothing, by which means most trades are over-handed, which causes many, for want of employment, and others through accidents, to become chargeable to the parish? So that by the iniquitous method of adding farm to farm, it is very plain that the whole community must suffer; therefore some speedy remedy should be applied, which I shall leave to some abler heads to find out; and am,

GENTLEMEN,

Warwickshire.

The OLD-FASHIONED FARMER.

N U M B E R II.

Remarks on rolling Land †.

GENTLEMEN,

ROLLING, as well as ploughing and harrowing, if admitted in the culture of fallow-lands, would, I presume, much facilitate eradicating of weeds, and promote the prolific capacity; for it often happens, that after land has been ploughed and worked with the great harrow, &c. there still are grass and weeds remaining, that will the next ploughing cause the furrows to be ropy, and then

* It might have helped to elucidate this subject, had our correspondent enquired whether there are at this time in Birmingham more poor maintained with the four thousand pounds, than there were twenty years ago with the nine hundred pounds then levied. E.

† This piece first appeared last month in the Newcastle Chronicle, and is now, by particular desire, inserted in this collection.

then much labour and time is required to make it to the mind of the judicious husbandman, which rolling in the following order will be found to elude.

Thus, when the land has been once ploughed, bracked, and harrowed, immediately give it a double rolling with a stone cylinder about four feet long and three feet radius, which, with its furniture, is a roller about one ton weight: the pressure of such roller, when there is little moisture in the land, fixes it so much, that no weeds nor grass can vegetate: next, in about a month after, put in manure by another ploughing, *viz.* dung or compost, whereof dung is the major part; but lime is at this time very improper, as it resists putrefaction: then give the land a stroke with the great harrow, and roll it as before: this puts the manure, soil, and juices in contact; by which, together with the vivifying heat of the sun, (that must be greater on rolled land than on loose, rough, unsteady particles of earth, because it thereby becomes quiescent, and the surface acquires a kind of polish) fermentation and putrefaction must be ardently excited.

That these are salubrious and most powerful agents in the fertilising of land, by loosening the compasses, and setting at liberty the more subtle parts of the manure and soil, and generating that sort of air which is found so necessary to animal as well as vegetable life, none conversant in these matters can make the least doubt.

Now, indeed, may a quantity of quick lime be applied to great advantage, by being spread on the surface; for the weeds that are harrowed up, will not only soon be dissolved by it, and converted into nourishment for vegetables; but the very principle of vegetation, which is going off in exhalations by the effervescence within, is by it absorbed, and retained for the nutrition of the crop, which it will communicate when it is ploughed in; and that may be done about fourteen or twenty days after, sooner or later, as the weather answers, or the experimenter sees it necessary: and if it is a soil fit to grow turneps, and the season proper, the seed may be sown immediately,

mediately, either in the drill or common way; but the drill, on many accounts, in sowing turneps, deserves precedence; or, if it is to be winter corn, one ploughing more, which is the third only, makes it in fine order for the seed.

The utility of rolling does not end here neither, for to roll wheat, rye, barley, &c. with a roller about twice the length and half the weight of the one above described, may be advantageous, as it presses down the soil, that has been raised by the frosts, about the minute ramifications of the attracting ducts, and augments the quantity of mould upon them by breaking the little lumps of soil, which, indeed, were very serviceable in winter, by affording shelter, but in spring will be of still greater use, by such imminution, in filling up the fissures, and preventing, in a great measure, the ill effects droughts have on light soils, by retaining and filtering rain water; whereby the soil imbibes whatever is nutritive, what is superfluous of the simple fluid only escapes.

These are some of the many advantages rolling produces in agriculture; notwithstanding which, it amounts to more than mere conjecture, that in general rolling corn may do more damage than it can do good, if such as the following cautions be not carefully attended to, *viz.* Never to roll corn but in dry, fresh weather; by no means use heavy rollers, nor roll too early, *i. e.* before the blades be pretty strong, for the wounds that the blades may receive, the roots, being then tender, will be unable ever to recover; nor too late, *i. e.* when the stalks are hardened and grown any height, for the roller will break them, which injury hardly can be repaired, and the crop is thereby hurt: that none but light lands are proper to be rolled, and those only which have been manured that or the preceding year with dung: in short, none but rich, light soils, in general, can be improved by rolling; for in poor lands it opposes the most active primogeneous agents, and undoes all that has been done for the crop by ploughing, &c.

Thus

Thus the soil, the condition, the growth of the corn, the weather, and the weight of the roller, are all to be most scrupulously regarded: when all coincide, the advantages of rolling will be great; but when they do not, the disadvantages may be insuperable.

Rolling, then, is neither the least critical, nor most insignificant piece of the husbandman's profession; therefore ought not to be performed at random and without circumspection.

Howburn.

C. CLARKE.

N U M B E R I I I .

Observations on the Properties and Effects of Nitre.

GENTLEMEN,

MANY particulars relating to the effects of nitre have been discovered, from the application of which possibly some uses of great and public importance may be deduced; therefore I think myself obliged to communicate them.

Herodotus informs us, that in embalming the dead, the bodies were laid in nitre seventy days. And it is well known, that a bottle filled with nitre, and placed in another vessel with water in it, will, in a cool place, produce ice.

Boerhaave, that eminent physician, in his Chemistry, says, that "it wonderfully cools and thins the blood, "and checks inclinations to venery; and in all inflammatory distempers, attended with an inflammatory condensation of the blood, is excellently attenuating, and "on that account may be properly called an antiphlogistic salt (that is, a salt which abates heat); and if the "flesh of animals be salted with nitre, it is thereby made "extremely red, and free from putrefaction."

The intense cold, frost and snow, in the north-east parts of Europe and Asia, and in the northern and southern parts

parts of America, are generally attributed to the great quantities of nitre in those parts, with which the air is impregnated. Fish in Iceland, and other northern parts, is cured and preserved by the frost. An immense quantity of pheasants, partridges, deer, wild boars, and other beasts, are brought out of Eastern Tartary to Pequing, in China, so frozen as to keep good several months: it is the same about the Cordeliras in South America: the frost has the same effect also in Greenland, Hudson's Bay, and in all the countries near the poles in North and South America.

Keyser in his Second Volume, page 364, gives an account, that snow is a branch of trade, in the mountainous parts of Italy, which is sent to Naples to supply the want of ice for the cooling of liquors. The note in that book is so particularly apposite, that I cannot avoid inserting it. "The use of snow and ice, in liquors, was first introduced to gratify the palate; but, now, it has the sanction of the faculty: and since its becoming into general vogue, the fatal rage of fevers is said to be considerably abated; and Plumpius, in his Treatise *de Valetudine Togatorum*, affirms, that since the use of snow has obtained in Messina, the burials have decreased above a thousand every year: and that this custom has obtained the same success in Spain, appears from Nonnius *de Re Gibraria*." So that there seems to be something similar, in the effects of snow and ice, to that of nitre, which latter, I am informed, is administered, and principally relied on, by physicians, in many sorts of fevers.

Now, from these properties of nitre in preserving the flesh of dead animals, the medicinal uses of it in curing feverish disorders, and its tendency to the health of mankind, it is imagined it would be of the greatest service to have it made use of, as far as may be, for the curing and preserving meat, butter, and other provisions for the sea; as the scurvy is, in a great measure, if not entirely, owing to the salt provisions obliged to be made use of there,

of which the following is, I think, a striking and convincing proof.

In the year 1630, eight English sailors, on the whale-fishery, were left behind at Greenland, destitute of all sorts of provisions, had nothing to live on there but the offals of whales they found, and the venison they killed, which was preserved from putrefaction by the frost. Great part of the time, their liquor was melted snow. At the returning season they were brought home perfectly well. The account of this, spreading into Holland, determined the Dutch to send colonies there, which they did two successive times, furnished with all sorts of salt provisions and necessaries; but they were all found dead, and by their journals it appeared to be of the scurvy, owing to their salt provisions.

But if salt-petre should occasion a less quantity of salt to be necessary for curing sea-provisions, for so much a less degree of scurvy would be produced; added to this, as it is found to be so prevalent in curing coagulations in the blood, and feverish disorders; it is natural to conclude, that which cures will prevent, and operate as an antidote against this dangerous and obstinate disorder, and may also be particularly useful to that set of men, on another account before suggested.

It may be used in our liquors, not only for agreeable, but salutary purposes, and have the effects of ice in the hottest climates. It may be worth while to have experiments tried, how much the thermometer would be affected by having quantities of it placed in rooms; and if it should be found that the air was thereby considerably refrigerated, it may be considered how proper it would be for sick chambers, and where there are great assemblages of people, as also for the habitations of the hot climates, for butchers, poulterers, fish-shops, &c. and in machines for the conveyance of fish, &c. and for bringing of seeds, and eggs of different sorts of birds, from remote climates; as also to encrease the coldness of baths, thereby more efficaciously to brace the nerves, and have the body at the
same

same time imbibe its salutary particles; and also in liquors, to preserve them from fermentation and acidity; for the rubbing of drowned persons, as a more prevalent substitute for common salt.

Meat put in a cloth, covered over with common salt, will keep a long time without corruption, insomuch, that it is not unfrequent to send a piece of beef roasted in London, so managed, to the West-India Islands. Whether its preservation be owing to the exclusion of fresh air, as nothing will ferment or putrefy *in vacuo*, or to the coldness of the salt, or to both conjointly, is unnecessary to enter into, as such is the effect, which is apprehended might more safely be relied on by the use of salt-petre; and it may deserve consideration, whether, by such an expedient, flesh, fish, and fruits, might not be brought fresh from such places, from whence it might be otherwise impossible to have them, by placing an *arcutio* to keep off the covering, and the whole environed with salt-petre.

A multitude of other purposes, to which nitre may be applied, might be suggested; but the consequence and importance of these may sufficiently deserve attention.

Before I put a period to this, give me leave to add, that it seems to be universally agreed, that the intense colds and frosts in the northern parts of the world are owing to the nitre in that air; and it has been judged, that the cold in latitude fifty-two, in North America, is equal to that in sixty-two in the eastern continent, which may probably arise from the earth there being more impregnated with nitre than in the other; and therefore it may possibly be worth while to try whether salt-petre might not be produced in those parts, and form a considerable and important article in commerce: and on this subject I must observe, that in the entrance into Hudson's Bay, on the north of Terra de Labrador, there is a bay in the old maps, called Salt-petre Bay, which is not unlikely to have been so denominated from salt-petre there; and the late accounts, of the Spaniards having discovered some in that southern continent in a similar latitude, seem to give an

increased probability, that such an attempt would be attended with success.

I am, GENTLEMEN,

Oxford,

Much your's,

Nov. 13, 1764.

P. E.

NUMBER IV.

Curious Directions with respect to Pruning of Peach-Trees.

GENTLEMEN,

HAVING lately met with a curious Treatise on the Cultivation of Peach-trees, written in French by Monsieur de ****, I thought my time could not be better employed than in selecting from this valuable little work the following passages, which chiefly relate to the manner of pruning those trees. As I do not know of any translation that has been published of this book, I send you my extracts, in order to their being preserved in your collection, hoping to see them inserted, though they cannot lay claim to that favour as being original. However, they have some right to your protection on account of their intrinsic value; and I was the rather induced to recommend them to your notice, as not knowing any other channel by which they could, with so much propriety, be introduced to the knowledge of the public*. My author says, in his seventh chapter, "The best time for pruning is when the blossom-buds first begin to smell; then you may discover which blossom promises the fairest for producing a fruit,

That

* As we are obliged to our correspondent for many valuable pieces which have already appeared in our Three First Volumes, we readily give place to his extract, though we cannot make a practice of inserting translations from the French, as, should we do it, the original articles transmitted to us by our kind correspondents must, of course, be often precluded; and that this would be improper, it is surely unnecessary to observe,
E. N. R. A.

That you may not run the hazard of breaking off such buds as you should wish to preserve, do not offer to prune a twig till the tree is entirely unnailed from the wall.

Your method of pruning must be regulated by the age, health, and vigour of the tree, and in some sort must humour what has been already done.

I will begin with the tree in its first year: if it has made but weak shoots, you first reduce its shoots, leaving from two to four on each side, opposite to each other, and prune them to the length of five or six inches. If you find a small bearing branch that looks exceedingly flourishing in the middle, you may leave it; but unless it is remarkably promising, cut it off, for the middle of the tree is sure to be filled if you prune the sides properly: and the whole beauty and goodness of the tree absolutely depends upon your right treatment of it for the two first years.

If your tree has thrown out in a good place, on each side, one strong branch, prune it to eight or ten inches, leaving here and there a bearing branch.

It is the way with many gardeners, who look on these strong shoots as blood-suckers, to lop them off without mercy; but this ought to be done with discretion, for it is not uncommon for a tree, so severely handled, to languish and pine away, and from that luxuriant state to dwindle to nothing: the reason I take to be this, that, as in all trees the root bears a proportion to its head, the sap, being here repelled, becomes superfluous and putrid in the root.

Experience has taught me, that by pruning such kind of trees with judgment, they will, in two or three years, be brought into order: but if they still continue to throw out such strong wood, I should advise the stopping all such smaller branches of the year, which have been thrown out on the sides, in order more effectually to spend the sap: by this means the excessive luxuriance of the tree will be moderated, and much good bearing wood procured.

The

The only inconvenience to be apprehended from this practice, and what should be carefully guarded against, is, that the lower part of the tree is apt to become bare; but this may be remedied by an attention to pinch off the tops of the shoots in the month of May, and to lighten the head well when you prune it.

If there is one of these woody branches on the side, and one in the middle of the tree, they must both be taken entirely off, or the weak side will be totally overpowered, and the tree can never be brought into any handsome form: you must then likewise prune the lesser branches, that the two sides may be kept as equal as possible. Here I must observe, that none of these ill-placed branches would be seen, if what I shall advise in the following sheets had been diligently attended to in the month of May; for by lightening the strong side, the sap would naturally find its way to the other; but, as few people will take this trouble, we must find some means of repairing the damage incurred by such neglect,

This is the method to be followed for the first year. Let us now proceed to the second, and so on.

I have spoken sufficiently of such trees as run into wood, whose redundancy must be moderated before they will throw out any bearing branches, and by what means it may be done: as to those that are moderate, they must be treated proportionably; but, above all things, care must be taken to keep the middle of the tree short, and the sides perfectly equal: let no flattering promise of fruit induce you to deviate from this rule.

In regard to the good management of the tree, let two or four proper branches be, as it were, the parents of the rest; over these you must be particularly watchful: let them spread, and have all the space you can think they will possibly cover: they may be allowed from twelve to fifteen inches when you find them of a reasonable strength. As to the lesser, they should be left six or eight inches long, as you think the vigour of the tree will bear, and the space to be occupied requires; and accord-

ing as the blossom-buds are more or less distant from the foot of the branch, your own prudence must direct you to leave the shoot longer if necessary.

Take care to preserve such blossom-buds as come out with a leaf-bud between them: those which come single, though with a leaf-bud by the side, will rarely set, or come to perfection: notwithstanding they look very promising, never suffer yourself to be tempted, by a prospect of abundance of fruit, to allow too many to remain on the tree; for by this means you waste the strength of it, and, in the end, ruin both the middle and sides.

As to slender, ill-ripened branches, I reject them all; as also those tender twigs which are so much respected by the generality of gardeners; that is, supposing I have well-ripened wood of a moderate size (not too large) sufficient for my use, it being incontestibly proved, that such good wood will nourish the fruit best, and bring it to the highest perfection. I would not be understood here to reject those little spurs which are only an inch or two long, and are clustered like nosegays; no, these are to be preserved with the utmost care, as they generally produce the finest of fruit.

There is a good use to be made of the branches which I here condemn, namely, to prune them down to the last eye, when they are in a place which may possibly become bare in future time: one of these branches, so pruned, may, in the next year, produce a better, which, if it is not wanted, may again be reduced, and so on, till it shall be desirable to make use of it.

It will be always found useful to have some of these branches in reserve in all parts of the tree for a supply, in case of blight, or when a branch has bore too much fruit the year before; and for that reason I should advise the cutting even a good branch for this purpose, when others are wanting.

As all trees naturally shoot upwards, you must use your utmost diligence to keep the bottom part full of wood, which is only to be effected by proper pruning, and laying the branches exactly even, and quite horizontal:

great

great attention must be given to this; for a crooked, or bent branch, or one laid over another, will never produce good fruit.

On the art of pruning depends the duration of the tree; and it consists in not overcharging it, and keeping it in all parts full: this may appear very easy, but it is attended with difficulty, as to the choice of what is to be preserved, and what rejected, and as to the keeping of promising blossom-buds, and not pressing the tree too much if it has bore greatly the preceding year.

Now let us pass on to the time when the tree shall be found in its full beauty and vigour.

Supposing it has been managed after the method I prescribe, after it is unnailed, examine into the branches which bore the last year: these are easily discovered by their leanness, and the poor shoots which they have made. I cut them quite close to the large branch from which they spring, unless they have by chance thrown out some very promising wood, which may be worthy of preservation, especially if there is nothing in the neighbourhood to take up the place; then I go to the shoots of the year, and cut out all the very strong woody ones, and the very small ones, preserving only those of a moderate size, and the little clusters, or nosegays, before mentioned.

If I must, out of necessity, keep any of the weak shoots, I just top them about the thickness of a crown-piece: this done, there remains nothing but branches of equal strength and goodness, and I can see clearly what I have to do.

My only business now is, to make choice of what I shall preserve of the remainder; and this is my rule:

Of all the shoots which are made from the wood pruned last year, I leave only one lower shoot; and by the precaution I have used in the month of May, by nipping the tops of the others, that will be found by far the best, or rather the only good one.

As for such as neglect this operation, they must make the best choice they can.

After

After this I go over it a third time, and examine whether the tree has borne much fruit the last year, that I may prune accordingly. The magdalone is generally a vigorous tree, and will bear a greater burthen than some others.

If my trees of every sort have not been too much exhausted, I prune to the length of eight inches, if the place will allow it; but if I am confined, and have nothing below to supply the place of a wasted branch, I shorten it to three or four inches.

It will generally be found, that half my branches are short, and half long, according to their situation; by which I am enabled to keep the tree always full of good wood without pressing it to its hurt.

I have said, that I never leave more than one shoot on the last year's branch; but in case a blight has killed the neighbouring branch, or there appear two shoots on the lower part, so very equal in goodness that there can be no choice between them, I then prune to the length of five or six inches: but if I have not an absolute necessity for both for present use, I prune the highest of the two to the length, and cut the lowest quite down to its first eye, in order to insure to myself a provision for the next year."

My author, in the following, or eighth chapter, treats of budding, or nipping off the buds; from which I shall select a few passages, which cannot, I think, fail giving pleasure to your readers.

"What I shall here call nipping of trees, is an operation of all others the most important, and at the same time one the most of all neglected: when I say the most important, I mean to except the pruning. The use of nipping is this, that it helps and forwards all other operations, and gives to the fruit these three advantages, their certainty, beauty, and goodness.

The proper time for nipping is the month of May, when the buds are sufficiently formed for you to ascertain your choice, and still tender enough for you to nip them

off with your finger and thumb, without any other instrument. This nipping is usually confounded with two other operations, which are called pinching and stopping, because they are generally all performed together; but I shall distinguish them, the one from the other.

All the management of peaches (as I have said before) may be determined in these two objects, namely, the good figure of the tree, and its abounding with good fruit: to accomplish this, all your work should tend.

With this view therefore you are to divest it of all that may be useless or hurtful; and I must call all useless which is ill situated, though in itself good, and all hurtful which is ill in itself.

These two evils we must guard against, and they will be particularly found on the branches which were pruned the year before; and as these branches, according to my method, are most of them six or eight inches long, there will be found on them from eight to ten eyes, which are as many branches: such a number of branches cannot possibly be equally well nourished, and must, of course, breed confusion.

I reduce them, according to their situation, to two or three, which I chuse on the lowest side, opposite to each other, and the end one, provided the fruit is there, and that it is not lower.

If the fruit is only set on the lower side, or if it is set all the way along it, where the number of eyes may be from eight to ten, in both cases I reduce them to half their number, and preserve only three or four of the most promising, always observing to leave at the end a fair young branch of the year.

At the same time I pinch off with my nail such branches as accompany the fruit, to the thickness of about two crown-pieces, which I call stopping: and if there are others which have not fruit, I pull them quite off, reducing the number to two or three.

If the branch has not thrown out any fruit, I prune it down to the second bud; that is to say, I only preserve the
the

the two lowest buds, unless the tree is too luxuriant, and it becomes necessary to leave more in order to consume the sap.

With respect to such branches as I have pruned short, I preserve only two of the new shoots, the uppermost and its opposite: I suppress all others which have not fruit by them; such as have, I pinch them; but if the fruit fall off, I serve them all after the same fashion: sometimes, however, I leave only one of these new shoots, and it must be always the lowest.

If I find a woody, strong shoot on the branch pruned last year, or even if it shoots from the body of the tree, I consider whether it will weaken the tree, be detrimental to its neighbour, or not of immediate service: if it answers no purpose, I take it entirely off.

But if it may hereafter be found useful, either to fill a vacant place, or to waste the sap which too much abounds, I pinch it down to four or five leaves; and as there comes a new shoot from every leaf, I shall find presently as many free shoots, of a moderate size, out of which I may chuse, in the first sailing, such as promise best. As to the weak shoots which come from the old wood, I suppress them entirely, unless they come opportunely to fill a present vacancy, or are desirable for a future resource; but the little clusters, or nosegays, I always preserve, let them be where they will.

Great regard should be paid to the bottom part of the tree, as it often puts forth good shoots, which will be found very convenient to supply such wood as is exhausted with bearing: these I preserve with the utmost care, and, if they are strong, pinch them off to five or six eyes. As for those craving shoots which are to be known by their bright-green colour, with here and there red spots, and by their size, they must be wholly taken off, unless they are absolutely necessary to fill a vacancy, and that you are without other resource: if so, you must pinch them now, and again in the month of June,

It generally happens, that from one eye, especially that at the extremity of the last year's pruning, three shoots

will come forth of nearly the same strength : chuse only one of them, and let it be that which is best placed.

When you meet with twin fruit, take off the least of them with all possible care not to shake the other : by this means you have a chance of having one good fruit, and if both are preserved, neither will be so.

These are the chief points which relate to the nipping. The next thing is to shew the advantages it produces.

It may easily be comprehended that these retrenchments, made in the proper time, are likely to strengthen such as are left, both fruit and branch, as, from a moderate share of nourishment, they will by this means enjoy a better, till they are made perfect.

Nay, more, it is possible that what you have retrenched of the ill-placed branches, which you must have cut off at the first nailing, might have been more favoured by the sap, and have robbed the well-placed branch, which, by being left alone, now enjoys the whole of the nourishment, and becomes strong and vigorous.

By these retrenchments you reap this further advantage, that when you come to the nailing, instead of being obliged to clear with the pruning-knife, you have these branches ready cleared to your hand ; by which you are saved an infinite deal of trouble, which the confusion of such a multitude of shoots occasions, and are spared the disagreeable sight of abundance of stumps, which the summer-pruning must necessarily produce, and occasion a deal of business when you come to the winter-pruning, unless you unadvisedly leave them on.

It often happens likewise, that these nasty stumps, left at the time of nailing, throw out two or three ugly shoots, which waste the sap, breed confusion, and ruin the fruit.

It farther happens, that by your efforts to take off these superfluous and ill-placed branches with the pruning-knife, and the uncertainty you work in, you rub off many of those fruits which you would wish to preserve, they being then past danger.

By this nipping, which I so much recommend, you avoid the following inconveniencies, which the fruit hid, stifled, and, as it were, buried in leaves, would be subject to, namely, being made too tender, which may plainly be discerned by its whitish colour; and when it comes to be exposed suddenly to the free air, joined to the strong rays of the sun, which are new to it, it is most probable that the greatest part of them will wither and fall; for you must observe, that, as the sap always pushes forward to the extremity of the branch, and as only these extremities enjoy the benefit of the free air, the lower part of the branch, being smothered, casts its leaves, or so great a part of them, that the fruit at best is but covered by halves,

None of these inconveniencies will happen, if your branches have enjoyed the free air, in their whole length, and your fruit hath been early cured to the little inclemencies of the weather; for, by making them hardy, by the time they arrive at the size of a wall-nut, you will scarcely find any fall, unless they are too many for the tree to nourish: you have this further advantage by an early exposure of the fruit, which is, that the insects, particularly snails, will not be so fond of it, as when made so tender by being covered with leaves.

Regard must be always had to set such fruit and branches at liberty as are confined by the nail; for if once a fruit is become deformed, no art will then reduce it, and a deformed fruit will never be well flavoured.

It will here be necessary to speak of blights, which, by knotting the branches, and enlarging them improperly, swallow up the sap you want to nourish the tree.

When the trees are so attacked, you should not only take off all the infected leaves, but likewise cut away the branch beyond the infected place: by this you give the sap the power of going into new shoots, which will be equally useful another year.

If your tree be infected to a great degree, your expectation of fruit for that year must not be great, for they will fall by degrees before they come to perfection.

The

The ants and lice will sometimes occasion the same disorder among the leaves and branches; and in that case you must use the same means as directed above; but generally these insects are inveterate in poisoning the eyes of branches, so that the sap is obstructed. In the twelfth chapter you may find a remedy for this evil.

If the tree should be attacked with the gum, you should prune it at least an inch beyond the grieved part, which will prevent the destruction of the whole in cutting off the communication: from this you will have a shoot or two which will supply the place, and your loss will be but trifling.

The last and greatest advantage of nipping is, that you will find an ample compensation for all the time you have so employed when you come to nailing, as you will see your work clearly before you, and every branch will naturally take the place that you would desire to put it into, and you will scarce need to make use of the knife.

I have experienced, that I can sooner nail three trees which have been nipped than one which has not.

Notwithstanding this operation may have been carefully performed, your work must be reviewed every eight or ten days, as well to destroy the vermin, as to take off any superfluous or ill-placed shoots, which may put forth after a shower of rain; or when the morning-dew is on the tree, is the most likely time to find the snail at work.

Regard must also be had to stop the ravages of the gum, and you will find that time so employed is by no means thrown away.

For those that are masters of their time, it is as well to divide the operation of nipping in this manner: in the end of April I would take off such shoots as come behind and before the branch; and in the latter end of May, when the fruit is set, I would perform the rest.

These rules which I have now laid down, for the well-pruning by the hand, still demand that I should make some distinction as to their ages.

For trees in their first year, I begin by taking off the backward and fore-right shoots at the latter end of April, and

and only leave such as come on the sides; and if one side has put forth more shoots than the other, I discharge that side in order to drive the sap to the other: and at the end of May I make a second review, and if I find one branch a great deal stronger than the other, I cut or pinch it off.

Nearly the same method may be pursued for the two or three following years, observing this difference, that if the tree be vigorous, I relieve it much less in nipping than if it is weak; for I would only discharge a vigorous tree of the ill-placed and fore-right shoots which are put forth on the strong branch left at the last pruning, preserving always such as come on the sides, as many, at least, as I can possibly find room for on my wall.

As for an old tree, I not only take off the ill-placed shoots, but likewise all such as are weak to a certain degree; and, in order to strengthen the rest, I confine myself to a small number of the best shoots, on which I leave but a small quantity of fruit.

I nip such trees the last of all, because they are later in coming out.

I shall not say any thing here of such trees as are in full vigour, and bearing, as I have spoken at large of them in the beginning of this chapter."

As some of your readers may be curious in this matter, I shall, before I conclude, inform them, that the French title to the book from whence the above extract was taken, is, *Traité de la Culture des Pechers*, 12me Edition, à Paris, 1750, 12mo; and that Mr. Miller looks upon it to be one of the best performances published of late years upon any branch of the art of gardening.

I am, GENTLEMEN,

Yours, &c.

Y. Z.

NUMBER V.

An accurate Representation of the Observations of Pliny on Lucerne, with Remarks on parallel Passages in Columella and Palladius, and on some modern Objections to its Culture.

GENTLEMEN,

THE cultivation of lucerne with success, is a subject of so much importance to the nation, that it cannot be too carefully enquired into.

The authority of so great a naturalist as *Pliny*, has occasionally been referred to in writings on this subject, and that of some other ancient writers on agriculture slightly mentioned.

But this has been done with so great inaccuracy, that even contradictory accounts have been given by the same writer, as founded on *Pliny*; of which I shall give one flagrant instance in the sequel.

It seemed therefore to me a matter well worthy my attention to examine accurately all that *Pliny* says on this subject, and occasionally to note what *Columella* and *Palladius* have also delivered hereupon.

When I had done this, the whole appeared so worthy the attention of the public, that I determined to communicate the sense of these writers to all lovers of improvement in agriculture by your channel; and as several of your readers understand *Latin*, though many of them do not, I will give both the original passages in *Pliny*, and what I take to be an accurate, though *liberal* translation thereof, and add a few reflections on some objections to the culture of lucerne, which were certainly made to discourage the cultivation of this most valuable plant, and therefore require some notice.

As to the origin of lucerne, *Pliny* says, in the fifth chapter of his XVIIIth Book, "*Medica externa etiam Græciz est, ut à Medis advecta per bella Persarum, quæ*
"*Darius*

"*Darius intulit.*" That is, "*Lucerne is foreign to Greece, as being brought thither from Media in the wars of the Persians, when Darius invaded it.*" So says *Columella* in the Twelfth Chapter of his Second Book; and *Theophrastus* also, in the Eighth Chapter of the Eighth Book of his History.

Let us now, gentlemen, see for a moment how this matter is represented by modern writers on this subject.

The author of *A New and Complete System of Practical Husbandry, &c. &c.* in the 339th page of the Third Volume of his work, writes thus: "This plant [*lucerne*] is supposed to have taken its name *medica* from *Media*, whither *Darius Hystaspes* is said to have carried great quantities of it when he invaded *Greece*, and by that means its seeds were scattered there."

Now this representation is very different from what I have given of *Pliny's* sense.

If that greatest of ancient naturalists had said *Medis advecta*, instead of à *Medis advecta*, *Pliny* might have meant that *lucerne* was brought by *Darius to the Medes*, and not from the *Medes to Greece*: and then, indeed, the account would have been imperfect and strange, viz. that, to account for the name of a plant, the naturalist should rather tell whither than whence it was brought. But the established reading of *Pliny* leads us naturally to conclude, that *Darius*, finding this excellent fodder in *Media*, brought it thence to *Greece*, which he invaded; and the plants arising from its scattered seeds took the name of *medica* among the *Greeks*, who well knew whence it came.

Second thoughts, however, are often best, and so the author of the *New and Complete System* seems to think; for in page 297. of his Fourth Volume, he thus expresses himself: "According to *Pliny* and *Columella*, *lucerne*, which now yields such abundant crops in this kingdom, was originally brought into *Europe* by *Xerxes*, when he returned from his expedition against *Greece*."

Our author retracts not his former account; and therefore, gentlemen, this cannot be considered as a correction,

but a *contradiction*, unless he will shew first that *Greece* is not in *Europe*, or that *Darius* and *Xerxes* are the same person. It will also be proper, in a subsequent edition, to shew, by a *marginal note* at least, what country in *Europe* it was that *Xerxes* left his lucerne in when he returned from invading *Greece*, because one would think it rather natural that he should leave it when he came, especially as flying armies seldom carry back forage; and, I think, *Xerxes* had the misfortune to be defeated in a sea-fight, not very far from *Asia*.

II. Of the value and duration of this plant, *Pliny* says, "*Sed vel in primis dicenda: tanta dos ejus est; cum ex uno fatu amplius quam tricenis annis duret.*" That is, "Lucerne deserves to be celebrated in the very first rank; such is its excellency; for from one sowing it will last above thirty years."

Columella confines its duration to ten years, and so does *Palladius* in the First Chapter of his Fifth Book. But it seems probable from some modern experiments, that *Pliny's* account is more to be depended upon; especially if stirrings of the grounds and manurings of it be sometimes bestowed; for a plant of so strong a root as it is known that lucerne will grow to, must, if it has nourishment administered by stirring, &c. continue rather to improve than otherwise, especially if too much moisture, which would rot it, be avoided.

III. Its *description* is attended with some obscurity, according to *Pliny*; for thus he says: "*Similis est trifolio, caule foliisque geniculata: quicquid in caule assurgit, folia contrahuntur.*"

Thus it stands in the text of the *Geneva* edition of 1615; but by the help of M S S. and conjectural emendation of the pointing, it may be read thus: "*Similis est trifolio caule foliisque geniculata: ea cum in caulem assurgit, folia contrahuntur.*" That is, "Lucerne is like trefoil, both in stalk and leaves: it hath joints: when the stalk shoots up, the leaves are contracted." The note of the editor of that edition on this passage, viz. That, according

according to *Dioscorides*, the lucerne is like wild or meadow trefoil, but when it grows up, has narrower leaves, seems ill-grounded and impertinent.

IV. Of the nature and management of the soil, *Pliny* says, “*Solum, in quo seratur, elapidatum purgatumque, subigitur autumnno. Mox aratum et occatum integitur crate iterum et tertium, quinis diebus interpositis, et fimo addito. Poscit autem siccum succosumque, vel riguum [solum medica].*” There is certainly a good deal of obscurity, gentlemen, in this account; for by *subigitur* must be meant *digging* or *ploughing*; and yet mention of ploughing is made just afterwards: so that probably, with the annotator of the above-named edition from *Columella*, instead of *mox aratum*, we should read *Martio tertiatum*.

There is also a seeming contradiction in the account which *Pliny* gives of the proper soil, viz. that it should be both *siccum* and yet *succosum*, and even *riguum*. But I apprehend the former part of this description to relate to the *natural condition* of the ground, as being free from too much moisture, fatal to this plant; and the latter to the *care of the husbandman*, who, by manure, &c. gives it sufficient moisture to nourish the plant: so that I apprehend the whole passage may be thus rendered. “The ground, after the stones, and other rubbish, are taken off, must be *dug* or *ploughed* in autumn; so that it may be ploughed, for the third time, in *March*, have the clods broke, and be harrowed three times, at five days interval, having dung put into it. This plant requires a soil *naturally dry*, yet made sufficiently moist for vegetation by manure, or even watering of it.”

Columella says, that the ploughing of this ground should begin with October. It is remarkable, that *Pliny* does not express himself exactly as to the time of laying on of the dung. One would think, that he would have it laid on in spring, after the third ploughing; and yet it seems better management to mix it much earlier with the soil, to whose mellowing it will then greatly contribute.

V. Of the seed-time, *Pliny* observes, "*Ita præparato* "*[solum medica] feritur mense Maio, aliàs pruinis obnoxia.*" That is, "In a soil thus prepared, lucerne is sowed in *May*; for earlier it would be exposed to white frosts."

Columella says, in the end of *April* we ought to sow; but *Pliny's* direction, for the reason given by him, seems better.

Here I must remark, that if the fear of frosts deterred *Pliny* from sowing till *May*, in *Italy*, a country so much warmer than our's, how imprudent must it be to sow in *England* in *April*? Yet this is the season recommended by modern writers! This very year the frosts were so intense at *Whitsuntide*, in *June*, as to kill many of my potato-tops, and even the leaves of ash-trees.

VI. Of the quantity of seed, *Pliny* says, "*Opus est* "*densitate seminis omnia occupari, internascentesque herbas excludi. Id præstant in jugera modica vicena.*" That is, "It is proper to fill every spot with seed thick-sown, so that all plants may be excluded by the lucerne; to which end about ten bushels of seed to the acre will be required."

In this account I have not been scrupulously exact to adapt the *Roman* measures to our *English*; but, I apprehend, what I have stated is near enough the truth, to shew that *Pliny* advises much more seed to be used than any of our modern writers prescribe for broad-cast, from *Mortimer* to *Mr. Rocque*; twelve or fourteen pounds being the utmost of their allowance.

Indeed, it seems that so great a quantity as *Pliny* recommends must produce such a number of plants (as the seed is very small) as no land can nourish in perfection, unless the soil of *Italy* was incomparably richer than our's.

VII. Of the delicacy of the seed, *Pliny* observes, "*Cavendum nè adurat [semen], terræque protinus integri debet.*" That is, "Care must be taken to cover the seed immediately after it is sown, lest it is dry and wither."

This

This is, I think, a nicety which no other writer on the subject has observed. Perhaps the heat of the sun in *Italy* may be much more dangerous than in *England*; or, perhaps, the *Italian* husbandmen might have a custom of leaving, for some time, their seed exposed to the sun; which exposure this seed was found not well to bear.

VIII. Of the necessity of weeding of lucerne, *Pliny* says, "*Si humidum solum herbosumve, vincitur et desciscit in pratum. Ideo protinus altitudine unciali herbis omnibus liberanda est manu potius quam sarculo.*" That is, "If the soil be wet, and disposed to produce weeds, the lucerne is soon choaked, and sinks into common pasture; therefore, when the plants are an inch high, they must be cleared of all weeds, by the hand rather than the hoe."

It seems to me very surprising, that if the ground be managed as *Pliny* directs, and sown so thick as he prescribes, any weeds necessary to be taken away should arise when the lucerne is only an inch high; but if such did grow up in so little a time, it is not wonderful that *Pliny* should order them to be plucked up by the hand rather than torn up by the hoe, since this latter operation must leave the plants of lucerne at a much greater distance than *Pliny* supposes necessary, in order that they may choak up the weeds.

This great naturalist was so sensible of the necessity of thorough weeding, that he repeats his directions, saying, "*Verno [tempore] feri debet, liberarique cæteris herbis.*" That is, "Lucerne should be sown in spring, and cleared of other plants."

IX. Of the after-management of lucerne, as to weeds, *Pliny* says, "*Ad trimatum marris ad solum radi [debet]: ita reliquæ herbæ intereant sine ipsius damno, propter altitudinem radicum. Si evicerint herbæ, remedium unicum est aratio sæpius vertendo, donec omnes aliæ radices intereant.*" That is, "The lucerne, when three years old, should be laid even with the ground by hoes; for by such means the weeds are destroyed without hurting the lucerne,"

“ lucerne, by reason of the depth of its roots: but if
 “ the weeds still overshoot it, the only remedy is plough-
 “ ing again and again, till all roots but those of the
 “ lucerne be destroyed.”

Thus, gentlemen, it appears, that the method of ploughing and harrowing of the lucerne, which Mr. *Roque* recommends, is exactly that of *Pliny*, though not learnt from him by our modern, I dare say. “ *Multa renascentur, quæ jam cecidere, &c.*”

X. As to cutting, *Pliny* says, “ *Secatur incipiens florere, et quoties resfluit. Id sexies evenit per annos, cum minimum, quater.*” That is, “ Lucerne must be cut when it begins to flower, and as often as it flowers again; which may be six times in a year, and at least four times.”

This direction and assertion are perfectly agreeable to the dictates of the moderns. The difference of *seasons*, and still more of *climates*, may occasion a greater difference of the number of crops than is here mentioned.

XI. As to seeding, *Pliny* says, “ *In semen maturescere prohibenda est, quia pabulum utilius est usque ad tri-matum.*” That is, “ Lucerne should not be suffered to run to seed, because it is more useful for fodder till it be three years old.”

One of Mr. *Du Hamel's* correspondents earnestly advises not to suffer lucerne to run to seed while young, but for a reason very different from this alledged by *Pliny*, viz. that such running to seed will weaken the plants much more than several cuttings: and such probably may be the case.

It must then be of great consequence to the public, to be able to determine at what age lucerne may be *safely* allowed to seed, especially as *English* seed is allowed better than *foreign*. All I can say, is, that a root of Mr. *Lancaster's* lucerne, sent to me with the roots of his burnet, seems not to have suffered by running to seed, as he says it did in its second year: but experience must determine this point.

XII. Concerning the danger of lucerne, *Pliny* says, "*Dari non ad satietatem debet, ne deplere sanguinem necesse sit.*" That is, "Cattle should not have as much lucerne as they can eat given them, lest it be necessary to let blood."

Mr. *Mortimer* observes, that lucerne should be given at first with caution; and Mr. *Rocque*, and others, think it is so nourishing, that when horses are fed with it, they should have only part of their usual allowance of corn.

If the necessity of letting of blood be the only inconvenience which attends feeding fully on lucerne, it is not considerable; for bleeding is adviseable for all cattle turned to feed. I do not find that lucerne is said to hove cattle in the manner, or at least in the degree, that common clover does.

XIII. Of the properest time to use lucerne, *Pliny* says, "*Et viridis utilior est: arefcit furculasq̃, ac postremò in pulverem inutilem extenuatur.*" That is, "Lucerne is most useful when green; for it withers from joint to joint, and dries into useless dust." This account is perfectly agreeable to that which the moderns give of this plant.

I now come, gentlemen, to take some notice, though briefly, of what seems a kind of objection to the cultivation of lucerne, as advanced by one of your correspondents, who signs himself Y. in your last publication*.

The sum of what he advances appears to be this, *viz.* that the recommenders of the cultivation of this plant pursue *very different* methods of culture, *viz.* in *broad-cast* and in *drills*; that they prescribe *very different*, nay seemingly-opposite, soils, *viz.* one set, *shallow, light, gravelly*; and the other, *deep, strong, and rich*: finally, that the objector has tried one of the methods, and finds it unsuccessful.

To all this it may be sufficient to answer, that we might as well argue against the culture of wheat, because the partisans of the *old* and *new* husbandry raise it in *broad-cast* and *drills*: and the want of success in our writer's trial is no more a proof of the impropriety of that

* Pages 193, 194. Vol. III.

that method, than one bad crop of wheat by drilling would be against that method of cultivating of wheat, while the amazing success of it, in numerous instances, is *fully authenticated*.

I never heard before of one single instance in which lucerne, when drilled and weeded properly, did not succeed; and therefore it is most highly probable, that the writer's want of success should be ascribed to some peculiar circumstance in the soil, situation, or season, or to some unrelated circumstance in the culture; lucerne being so hardy a plant, that it is never known to die after the first year, if kept free from *weeds* and *water*, and not eaten down to the crown of the plant.

As to the difference of soils prescribed by the partisans of the *old* and *new* husbandry, it is a natural consequence of their principles, and affords no objection against *any* method of culture; so far is it from affording any objection against the culture *universally*. Ground sown in broad-cast cannot be so pulverised as that which is sown in drills, which may be frequently stirred; and therefore the shallow, light soil, which the former recommend, is fittest for their method, while the deep, rich soil, which the latter wish for, suits their's*.

The question seems to be, not "Whether Mr. *Rocque's* method will succeed, or whether Mr. *Miller's* will?" for it appears a fact too well established to be controverted, that both methods, when properly pursued, will succeed very well.

The only question on this subject, which can be agitated reasonably by men of sense, is, I think, "Which method is preferable?" And this, I apprehend, cannot be answered *generally*, but must receive a particular answer, according to the circumstances of soil, &c. and especially the convenience of proper instruments for drilling.

It

* If Messrs. *Rocque* and *Miller* recommend soils opposite to these principles, I leave them to defend themselves against this writer, as the editors of the *Museum Rusticum*, &c. invite the latter gentleman to do.

It has been well observed on this subject, that the *deeper* and *richer* any soil is, the better plants will thrive in it, if properly mellowed and pulverised. Clay is known to contain a great quantity of nutritious particles, but to hold them very close, and part with them not without the greatest reluctance. One need not therefore wonder at an experiment delivered by a person of unquestionable authority to Mr. *Mills*, and by him inserted in his *New and Complete System of Practical Husbandry**, viz. that a cold clay in *Lincolnshire* has been so mellowed and pulverised by the new husbandry, as to produce lucerne more flourishing than that of Mr. *Rocque*, in the opinion of those who have seen both.

I am, GENTLEMEN, &c.

East-Newton,

THO. COMBER, jun.

November 27, 1764.

NUMBER VI.

Some Remarks on stabbing Cattle hooved with Clover, with a Word or two on Burnet.

GENTLEMEN,

THOUGH I am very well inclined to your undertaking in general, and think that the various improvements in husbandry cannot be too soon, or too universally, communicated to the industrious husbandman, you will not take it ill if I remark, that your collection of papers has some conjectures, which, in my opinion, must rather puzzle than help the plain country farmer.

Among these, give me leave to single out a correspondent, (see Vol. III. page 113) who comes with his glyster-pipe, and his drugs boiled in three quarts of water till they come to two; that is, he is two or three hours in preparing a medicine for a malady, which, to my certain knowledge, kills in seven or eight minutes.

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* See the above work, Vol. III. page 247.

This distemper, if I mistake not, is owing to the quantity of air-bubbles taken down with the clover; which, being dilated by the heat of the stomach, swell it so immoderately, that it leaves no room either for the lungs to play, or for the heart to expand; so that an absolute stagnation ensues.

That this is the case, I think evident; for while the beast is swelling, it is very uneasy and restless; but as soon as ever it falls, there is instantaneously an end of all motion and struggling; and though you then stab, or try what experiment you please, the beast is irrecoverably gone.

That these air-bubbles are no chimera, may be seen any warm, dewy May morning, where, upon the edges of the leaves of every sprig of clover, you may, with the naked eye, behold, as it were, a fringe of small balls, resembling the globules of quick-silver: these, as the heat of the day encreases, are further expanded, and rise up in a vapour, till the grass is quite dry.

As oxen and cows never chew their meat, but crop it with the tongue, and swallow it directly, it is easy to conceive how these air-bubbles should be conveyed into the paunch, unbroken*.

If

* It may be, perhaps, objected, that if globules of air-bubbles are visible to the naked eye on clover, why do not we see them, when farther dilated, rising visibly in the air in little bubbles, nearly as big as peas?

I answer, that the ascent of vapour is not so effected. Look in a grass-field in a dewy morning, and you will there distinctly find these small bubbles, so filled with air, which are, in fact, specifically lighter than the circumambient air: on this account they are all mounted on the very tip of the spiry grass, whence they would escape in bubbles, were it not for the attraction from the grass, with which they are in contact.

Accordingly, if you examine them minutely, their shape is not spherical, but like a pear with the stalk downwards: their specific levity buoys them up; their attraction, at the point of contact, draws them down in the shape above mentioned. In the mean time, the sun acting on the included air, it is so far rarefied, that the outward watery case is made so thin, that it tears, or breaks, at the point, where the grass, by its attraction, holds it: on this, the outward air rushes in: the bubble, being broke

If you ask, why clover should be more subject to generate air than any other grafs; I answer, that it does not, but that latter-math is as subject to do so as clover; but as latter-math is of a more tender texture, it purges off without inconvenience, as in the case mentioned by your correspondent, where a glyster was given; whereas the large stalks* of the clover are not so easy to pass away.

The distemper thus known, the remedy is obvious, namely, stabbing; and I have seen this operation performed on ten cows together, without the least danger or inconvenience.

It is to be done on the left side, about three inches from the hip-bone, and two inches below it.

The reason why the wound is to be made on the left side will be obvious, upon the mere inspection of the first book of anatomy which you have at hand, where you will see that the stomach can in no other place be easily come at.

As to the size of the wound, I think it not material, it being peculiar to the flesh of cows, or oxen, to heal very easily, and never to fester †.

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broke into infinite small particles, disappears with a sensible elastic snap.

The smaller parts are driven upwards, both by their specific levity, and by the direction of the outward air, which, breaking in at bottom, must push them upwards. The larger parts return down to the ground, where probably the same operation is repeated till all the grafs is dry.

* On the making the incision, I have known the large stalks of the clover lie across the wound; and they have been drawn out through it, undigested, in pretty large quantities; but this I think a wrong practice: the use of stabbing is merely to let out the air; that being done, the digestion will go on of itself, if you let it alone.

† This is, perhaps, owing to their very cool and simple diet; perhaps too, to the amazing thickness of the hide, which granulates in healing in a very particular manner, never, that I know of, forming any pus.

Sure it is, that of twenty beasts, which I have seen stabbed, none did amiss, though the excrement poured out of the wound continually. They healed at last without any stitching or plaister;

As to the knife, it is not at all material whether it be pointed or not; the sharper the better, as the incision will more easily be made; but the size of the paunch, I will warrant it, will put it very far out of the power of the knife to reach the intestines. However, it may not be improper to gauge the knife at about an inch and half, or two-inches long.

There is one caution necessary, and that is, not to stab lower than an inch or two below the hip-bone; for the excrement always, more or less, works out at the hole; and if you make it low in the paunch, that, with the weight of the excrement, will prevent the closing of the wound, which is unseemly, but not dangerous; for I have known a cow or bullock killed, with the hole not closed, from the above mistake, and die exceeding good meat; which fact, if it should appear never so marvellous to you, is yet true: and if you will look into Dr. Cheselden's Treatise of Anatomy, second edition, page 136, you will find a case, exactly similar to this, in a human body*.

I cannot close this letter without a word or two upon burnet, of which so much is said in your collection.

As we live in a country lately enclosed, every inch of our land has been looked over and valued by the best judges we could fix upon, in order to ascertain the value of each man's property, both before and after the said enclosure.

Now, it is a general rule, that wherever this burnet grew, (and we have great quantities of it) that land, of course, was of the lowest quality.

As to the plants keeping long green, and its early appearance of fine pasture in the spring, this is owing to a
pungent

plaster; nor were they housed at all, but for the first night after the operation.

* The case mentioned by Cheselden was this. "I was called to a poor woman with a mortification in the abdomen. I cut away the small gut that was mortified, so far as could not be saved; then I stitched the sound part of the gut to a sound part of the wound near the navel: to this it afterwards adhered, and the woman recovered, and voided her excrement that way, without any notable inconvenience."

pungent oil, with which it abounds, the warmth of which is a preservative from the frosts: but that same oil is also the cause that none of our cattle are fond of the hay made of it: they will eat it greedily for a day or two, while they are tempted by the novelty of the taste; but soon after, it heats their mouths, and they will eat straw rather than it.

This is so true, that wherever the horses belonging to the army are quartered in these parts, the officers are very watchful not to be tricked by the inn-keeper with that hay wherein there is burnet. We give it our cows at the beginning of the year; but they will not eat it at all after Christmas, when it gets dry; or, if they do, it makes them lousy.

The truth is, we have borrowed all these fine notions of improvements by artificial grasses from France and Switzerland, where winter fodder is hardly to be had at all, and they, of course, are put to their shifts; but that is no reason why we, who are under no such necessity, should do the like.

I am informed, by undoubted authority, that at Geneva, which borders upon both these places, they give their horses ashen faggots, made of the tenderest branches, which they eat all winter very greedily: but I shall leave it to you, gentlemen, whether this should be a reason why a visionary projector should recommend the same thing to the English grazier.

I am, GENTLEMEN,

Your very humble servant,

Warwickshire, Southam,
December 1, 1764.

P. H.

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NUMBER VII.

*A short History of Agriculture, with various Particulars
respecting many Writers on that Subject.*

GENTLEMEN,

THE pleasure I have received in reading an *octavo* volume lately published, treating of the culture of lucerne by transplantation, induces me to send you the following extract.

One of your correspondents has already laid before your readers the method above mentioned of cultivating lucerne: my extract is quite of a different nature, being neither more nor less than a short history of agriculture, and of the writers on that subject.

This history I found interspersed in various parts of the above work: I have collected it into one point of view, and endeavoured so to connect it, that it will, I think, prove entertaining and instructive to your readers; but I shall no longer delay laying this valuable extract before them.

“ Some suppose the collection of agriculture, called *Geoponics*, to have been extracted from the originals by one Cassianus Bassus: others imagine the extracts to have been marked in the respective MSS. by the hand of Constantine IV. or selected by his orders, and then recommended to the public, under the patronage of so illustrious a name, by the Greek editor. Cornaro, who translated this work into Latin, about 1528, fourteen years before the Italian translations were published, declares himself to be of the latter opinion; and so do the two Italian translators, Nicolo Vitelli and Pietro Lauro. Nor are reasons wanting for encouraging such a conjecture, since, in a sort of epistle dedicatory, prefixed to the original, by an anonymous author, cotemporary with Constantine, it looks as if the emperor made the *excerpta*, and commanded them to be published: for the editor calls
the

the *Geoponics* Constantine's Commentaries, and observes, that this prince, in several respects, was superior to him whom the world surnamed the Great.

Indeed, it must be acknowledged, that Constantine IV. had uncommon merit; for, having conquered the Saracens and Arabians, and performed great exploits by sea and land, he not only patronised the arts of peace, but studied the practices of them diligently, fixing his chief attention on the advancement of husbandry. He also restored philosophy and eloquence, and collected the decisions of the famous synod held at Constantinople.

The extracts relating to agriculture, preserved by him, are selected, principally, from Greek writers; nevertheless, some detached parts are translated from Latin authors; and much are we obliged to this imperial care; for the Greek MSS. from whence these extracts were made, are now lost; as are many others which were written in Latin.

Of course, the *Geoponics* serve as the best commentaries towards explaining several disturbed and corrupted passages in such Latin writers, *de re rustica*, as now remain; and the said Roman authors, in their turn, where they copied or translated from the Greek, are excellent expositors of various puzzling and dark passages in the *Geoponics*:

——— *Alterius sic*

Altera poscit opem res, & conjurat amice.

Columella flourished under the emperor Claudius, about fifty years after the death of our Saviour; and lived in Spain, in the province of Bœtica. His tenth book, which was intended as a supplement to Virgil's *Georgics*, has its merit. All good bailiffs and land-stewards were called from him *Columellas*; witness the following inscription on an antient marble:

Servu' neque infidus domino, neque inutili' cuiquam,

Lucili Columella hic situ' Metrophanes.

"Here lies Metrophanes, the Columella of Lucilius, faithful to his master, and-unuseful to no man."

From

The two Quintilii, who writ on agriculture in the reign of the emperor Commodus, give directions to manure Iucerne (τὴν μανούριον κοπρῆσαι) in the month of January. These writers, brothers, and both governors of provinces, were put to death by Commodus, about the year 186. They had no crime, except that of being rich, good, and knowing.

Epitomizer of Dian Cassius.

From the multitude of books published on the subject of cultivating the earth, one would have imagined the art to have been more studied than it really has been; since, upon the whole, it continued in a sort of declining condition from the days of Virgil and Columella till the time of Constantine IV. and then lay in a kind of dormant state till about the middle of Henry VIIIth's reign, when it was rather revived than improved.

Indeed, about that time, judge Fitz-Herbert, in England, (better known amongst us, as author of another excellent work, called *Natura Brevium*) Tatti, Stefano, Agostino Gallo, Sanfovino, Lauro, Tarello, &c. in Italy, published several considerable books in agriculture; but our countryman was the first, if we except Crescen-zio dell' Agricoltura, (whose fine performance was printed at Florence in 1478) and Pier Marino, the translator of Palladius *de Re Rustica*, who made his work public in year 1528.

In the same century appeared Matthioli's Commentary on Dioscorides, as also a translation of Theophrastus on Plants, by Biondo; and another of Columella, by an unknown hand.

Such of these Italian writers on husbandry, as did not concern themselves with translations, made the antients of their country their text and model, and are looked upon to be excellent in language, and no ways defective in experience and knowledge; on the former of which accounts, I have sometimes known collections of these authors works made in Italy, not for the sake of acquiring knowledge in husbandry, but merely on account of reading the pure Tuscan style. Mean while, Fitz-Herbert

shone

none with equal lustre of truth, though not of language; for the Italian tongue was then in its meridian of glory, and the English had declined from the days of Chaucer, rather than advanced: yet our countryman kept the field without a rival.

His first work in husbandry is entitled, *The Book of Husbandry*: printed in Italics.

At the end of it are these words:

“Here endeth the right profitable book of husbandry, compiled sometime by master Fitz-Herbarde, of charity and good zeal that he bare to the weal of this most noble realm: which (work) he did not in his youth, but after he had exercised husbandry with great experience forty years.”

Imprinted at London, in Fleet-street, in the house of Thomas Berthelet, near the conduit, at the sign of Lucrece, (*cum privilegio*) 1534, small 8vo.

Of this work the author speaks as follows:

“As touching the points of husbandry—I will not say it is the best way, and will serve best in all places: but I say it is the best way that ever I could prove by experience, the which have been an house-keeper forty years and more; and have essayed many divers ways, and done my diligence to prove by experience which should be the best way.—

———Rhet’ric in me doth not abound;

Wherefore I have sown such seeds as I found.”

[i. e. managing an estate,]

His second work, in husbandry, is entitled *Surveying*; or, as he calls it, in another place, *The Book of Surveying and Improvements*, small octavo, containing one hundred and twenty pages, imprinted for Berthelet, 1539, in a black letter.

Fitz-Herbert was born at Norbury, in Derbyshire, and, if I mistake not, is buried there. He was made judge of the Common-pleas in the fifteenth year of Henry VIII. How he could be a practitioner of the art of agriculture for forty years, as he himself says in 1534, is

pretty extraordinary. I suppose it was his country amusement, in the periodical recesses between the terms.

This treatise consists of instructions to noblemen and gentlemen who manage their estates in person; and to land-stewards, bailiffs, &c. who act under them, or in their stead. It sets forth likewise the nature of tenants tenures, and the laws of court-baron, court-hundred, chartuaries, &c. being a sort of commentary on an old statute named *Extenta Maurii*.

In a word, one may pronounce justly, concerning each book of husbandry which Fitz-Herbert has given us, what a modern writer observes of Crescenzio's *Agricoltura*, which was published fifty-six years before, *est libro summatissimo et fa testo dell' arte*. In short, Fitz-Herbert, like Virgil, seems to have written entirely from his own experience.

Those who cannot procure these two books of Fitz-Herbert, (of which, probably, there are not twenty complete copies in the kingdom) may content themselves with S. B.'s Epitome of Husbandry, 12mo, 1669; which author, without making the least acknowledgment, has transcribed from him one hundred and eighty-one pages, almost *verbatim*.

It is pretty plain that the ingenious and diligent enquirer, Samuel Hartlib, hereafter mentioned, had never heard or known of Fitz-Herbert's works, though published a little more than a century before his time, as will appear from the following passage, where he laments that we have not a system, or complete book, of all the parts of agriculture. "Till the latter end of queen Elizabeth's days (says he) I suppose that there was scarce a book wrote of this subject: I never saw or heard of any. About that time Tusser made his verses, and Scot wrote about an hop-garden. Googe translated some things. Lately divers small treatises have been made by divers, as Sir H. Platt, Gabriel Plattes, Markham, Blythe, and Butler, who do well in divers things; but their books cannot be called complete books, as you may perceive by
sundry

many particular things not so much as mentioned by them. The Country Farmer, translated out of French, is enough, if not more than enough; but it is no ways framed for us here in England: and I fear the first authors went on probabilities and hearsays, rather than experience. I hope some ingenious man will be encouraged to undertake a work so necessary and commendable." *Legacy*, page 105, 4to, 1651.

Fitz-Herbert's books of agriculture soon raised a spirit of emulation in his countrymen. I have seen a list of several English writers on husbandry, who were some of them his contemporaries, but have never been able to procure a sight of their works, nor obtain any material intelligence concerning the authors. For the sake of the curious, I shall give a transcript of their names, as it was minuted down, in queen Elizabeth's reign, by that famous husbandman, Barnaby Googe, Esq;

Sir Nicholas Malbee.—John Somer (canon of Windsor).—William Lambert [I am since informed, that he writ on the management and diseases of cattle].—Henry Breckhull.—H. King, D. D.—Henry Dennis.—John Hatche.—Nicholas Yeerzwort (query, if not Nicasius Yettswort, whom Anthony Wood mentions as a writer on husbandry).—Captain Bingham.—Thomas Wettenhall.—Richard Deering.—M. Franklyn.—Richard Andrews.—William Pratt.—Phillip Partridge.—Henry Daforth.

N. B. From this list it appears, that the English contributed as much towards the revival of agriculture as the Italians, and (translations from the antients excepted) began as early. The Flemings and French made no figure till about a century afterwards,

At length, in queen Elizabeth's reign, several husbandry writers copied Fitz-Herbert: Mascal, Markham, and others, in the times of James and Charles I. compiled from all; yet none had the gratitude to mention or acknowledge their first instructor. One writer particularly, not long after the restoration, transcribed the larger part of both Fitz-Herbert's books, almost *verbatim*, as is hinted above, without so much as informing the reader, or making

the least apology for this freedom, but calling his plagiarising the Epitome of Husbandry, 12mo, 1669. He signs himself S. B. (Samuel Blagrave, or, as others say, Billingsly.) This transcript (now valuable by accident, as Fitz-Herbert's books are very scarce) reaches to the end of page 181, and the remaining chapters are taken with the same liberty from Maschal, Blythe, and an Italian author, who writ a treatise, called, by the translator, The Heroic Excellence of Horsemanship.—Indeed, the copying of English writers on husbandry, one from another, has been so servile and notorious, that there is hardly a mistake in the antient authors last mentioned, as also in Gooze, Plattes, &c. which is not faithfully preserved in modern works upon the same subject; which will appear to every candid reader upon examination.

One may say, of Fitz-Herbert's Husbandry, what Sir P. Sidney applied to Chaucer's poetry: "I marvel how, in those misty times, he could see so clearly, and how others, in such clear times, could go so blindly after him."

If we except only the occasional writers on English husbandry at that period, we had little or nothing that resembled a systematical body of agriculture, but Fitz-Herbert's two books, for the space of one hundred years; and then some new and great lights broke in upon us from the admirable writings and discoveries of Barnaby Gooze, Lord Bacon, Sir Hugh Platt, Gabriel Plattes, Sir Richard Weston, Hartlib, Robert Child, Dr. Arnold Beati, Evelyn, and several others.

France, about the year 1600, (and not sooner) made considerable efforts in reviving husbandry, as appears from such large works as *Les Moyens de devenir riche*, and the *Cosmopolite*, by Bernard de Palissy, a poor potter, in the reign of Henry IV. of France; *Le Theatre d' Agriculture*, by de Serres; *L' Agriculture & Maison Rustique*, by Mess. Etienne and Liebault, &c. &c.

The Flemings, about the same period, dealt more in the practice of husbandry; than in publishing books upon the subject; so that questionless their intention was to

carry on a private lucrative trade without instructing their neighbours; and hence it happened, that whoever wanted to copy their agriculture, was obliged to travel into their country, and make his own remarks; as Plattes, Hartlib, and Sir R. Weston, actually did. Their principal, and, one may add, their very just idea of husbandry consisted in this, namely, to make a farm resemble a garden as nearly as possible. Such an excellent principle, at first setting out, led them of course to undertake the culture of small estates only, which they kept free from weeds, continually turning the ground, and manuring it plentifully and judiciously.

Having thus brought the soil to a just degree of cleanliness, health, and sweetness, they ventured chiefly upon the culture of the more delicate grasses, as the surest means of acquiring wealth in husbandry, upon a small estate, without the expence of keeping many draught-horses or servants.

After a few years experience, they soon found that ten acres of the best vegetables for feeding cattle, properly cultivated, would maintain a larger stock of grazing animals than forty acres of common farm-grass; and the vegetables they chiefly cultivated for this purpose were lucerne, saintfoin, trefoils of most denominations, sweet fenugreek, buck and cow wheat, field-turneps, and spur-rey, by them called *Marian-grass*.

The political secret of their husbandry was, as we have observed before, the letting farms on improvement.

Add to this, they discovered eight or ten new sorts of manures. They were the first, among the moderns, who ploughed in living crops for the sake of fertilising the earth, and confined their sheep, at night, in large sheds built on purpose, whose floor was covered with sand, or virgin earth, &c. which the shepherd carted away every morning to the compost-dunghill. Such was the chief mystery of the Flemish husbandry.

Judge Fitz-Herbert revived the agriculture of the ancient Romans in our country, and gave the first, (or, at least, one of the first) original works of that kind to Europe,

Europe; for the Italians, in general, began by translations from Columella, Palladius, &c. and the Geoponic authors. At the end of queen Elizabeth's reign, Fitz-Herbert's writings, by some unknown fatal concurrence of accidents, fell into a sort of obscurity. They were even forgotten, except by a few chosen geniuses, who made great, but unsuccessful attempts during the reign of James I. (agriculture and rural oeconomics not being held in much esteem, either by that prince, or his ministers, if we except the endeavours made towards establishing a silk-manufactory) and, when the patron of every useful and elegant art succeeded him, the morning of his reign gave the promise of a calm, clear, glorious day; but the noon of it was turbulent and stormy, and the evening closed with tempests and devastation.

During a part of the reign of Elizabeth and James I. France exceeded England in the management of country-affairs, called, by the antients, *Oeconomics*; (which, perhaps, was owing to the writings of Des Serres and De Palissy) for France, at that time, allowed a free exportation of corn. Colbert hurt agriculture by encouraging manufacturers too much, and prohibiting the out-going of corn, under pretence of better subsisting his manufacturers; but Sully had taken the other method, and had nobler, as well as juster views. *Memoire du Marq. de Mirabeau adressé à la Société de Berne, en 1760, pages 271, 272, &c.*

Our fatal domestic wars changed the instruments of husbandry into martial weapons; but, after the death of Charles I. artful, avaricious men crept into the confiscated estates of the nobility, gentry, and clergy; and as many of these new encroachers had risen from the plough, (or some low condition of life nearly allied to it) they returned with pleasure to their old profession, being chiefly animated by the love of gain. Hartlib, Platée, Blythe, and others, seized this favourable disposition of the common people, and encouraged it by writings which have not since been equalled; nor was Cromwell wanting to lend his assistance.

But

But a total change of things, as well as the very cast and manner of thinking, joined with universal dissipation, and a false aversion to what had been the object and care of mean despised persons, soon brought the culture of the earth into disrepute with the nobility and gentry; which single circumstance, at any time, will throw a damp upon agriculture; for the farmer loves to be encouraged, animated, and rewarded by his superiors. It is true, the ministry, after the restoration, did all that was in their power to stimulate and sharpen the husbandman's attention, which ought to be related, with pleasure, to their lasting honour. Perhaps, some of them had struck upon the idea, by reflecting on the bad management they had observed in France and Spain, whilst they attended Charles II. in his exile.

England formerly suffered periodical scarcity and famine, almost as frequently as her neighbours. Exportation of wheat was first allowed about the year 1661, under several restrictions; one of which particularly was, that no wheat should be permitted to be sent abroad, except it sold at home below the price of twenty-four shillings a quarter.

The advantages of such permission were soon perceived; for wheat, in three years, increased to such a degree in its culture, as to sink one third in price; so industrious were men to raise what they had free and prompt vent for. Pleased with such promising beginnings, and in order to dispose of superfluous plenty, the ministry granted a new encouraging liberty of exportation, till the said grain rose to two pounds eight-shillings a quarter. At the same time, a duty was laid of five shillings and four-pence a quarter on imported wheat, which duty, in the year 1670, was advanced to sixteen shillings (or near one third the value of a quarter) which amounted in effect to a prohibition.

The government had reason to be satisfied with these prudent measures, and extended its views on the subject immediately after the revolution, by allowing a bounty of five shillings a quarter upon wheat to the exporter. This

was

was the secret spring that gave new motion to agriculture, and preserved that superiority we justly boast of at present.

At the time above mentioned, and in two successive reigns*, a proportionable gratification was allowed on exported rye, barley, malt, oatmeal, &c. so that, in the year 1750, the bounty-money amounted to three hundred and twenty-five thousand four hundred and five pounds; and, when this bounty-money ran so high, the price of grain, at home, was extremely moderate. Thus, supposing the government to grant two hundred thousand pounds every year, by way of gratuity, to encourage cultivators, the nation, in general, will gain one million five hundred thousand pounds from the single article of exporting corn.

Next to allowing exportation of corn, draining of fens and morasses, and recovering land from the sea, may be looked upon as the capital improvement in English husbandry: and, as the effects of this noble undertaking continue in a good degree of strength to the present hour, it may safely be asserted, that England has gained, for more than a century past, half a million a year, at least, from the said single improvement; not to mention the acquisition (if one may so speak) of so much land in fee-simple: for land, recovered to husbandry-purposes, is the same as conquering a new country. Now, if my account stands right, (and it comes from the best authority extant) our kingdom, in the space of a few years, till the year 1651 only, had recovered, or was on the point of recovering, in Lincolnshire, Cambridgeshire, Huntingdonshire, and Kent, four hundred and twenty-five thousand acres of fens and morasses, which were advanced, in general, from half a crown an acre to twenty and thirty shillings. So that, perhaps, few statesmen and generals have better deserved a statue or monument from this country than Vermuyden, the principal undertaker. He was a Fleming by birth, and a colonel of horse under Cromwell, but had before served in Germany in the thirty years wars.

Sir

* Vth of queen Anne; IIIrd of George II.

Sir Hugh Platt (not to mention his other excellent talents) was the most ingenious husbandman of the age he lived in; yet so great was his modesty, that all his works seem to be posthumous, except the *Paradise of Flora*, which appeared in the year 1600, when it is probable he was living. He spent part of his time at Copt-Hall in Essex, or Bishop's-Hall in Middlesex, at each of which places he had a country-seat; but his town-residence was Lincoln's-Inn.—His *Jewel-House* was published by Dr. Beati, commonly called, in England, Dr. Boat, (who, by the way, was as great a genius in husbandry as most we have mentioned); and the *Flora's Paradise* (with a second original part) was published by one Bellingham, the author's kinsman, who changed the title to the *Garden of Eden*.

Sir Hugh held a correspondence with all lovers of agriculture and gardening throughout England; and such was the justice and modesty of his temper, that he always named the author of every discovery communicated to him.

In a word, no one man in any age ever discovered, or, at least, brought into use, so many new sorts of manure. Witness his *Account of the Compost and Covered Dung-hill*, and his *Observations on the fertilizing Qualities lodged in Salt*;—*Street-Dirt*, and *Sullage of Streets in great Cities*;—*Clay*;—*Fuller's Earth*;—*Moorish Earth*;—*Dunghills made in Layers*;—*Fern*;—*Hair*;—*Calcination of all Vegetables*;—*Malt-Dust*;—*Willow-tree Earth*;—*Soap-Boiler's Ashes*;—and broken *Pilchards* and *Marle*.—See more concerning ashes in *Virgil's Georgics*: *Varro de Re Rust.* *Columella de Cult. Hort.* lib. x. v. 354.

G. Plattes assures us, that ashes, mixt with lime, kill moss in meadows, and prove likewise an excellent grass-manure.—*Discoveries*, page 29. And therefore, says Folkingham, it was an observation of the antients, "*quod lætas faciunt segetes stercoreatio, intermissio, & cinerum sparsio.*"

We shall next notice Googe's Four Books of Husbandry, 4^{to}, 1578, Saxon letter, and imprinted for John Wright. This valuable writer, Barnaby Googe, Esq; translated the work here spoken of, from the Latin of Conrad Heresbach, a German nobleman, who published it at Cologne, in 1573. Googe also has translated something from Palingenius, perhaps the *Zodiacus Vitæ*; but I never saw it, to the best of my remembrance. This gentleman (our second author of note in matters of husbandry) writ forty years after Fitz-Herbert. He was of Albingham, or Alvingham, in Lincolnshire, and grandfather to Barnaby Googe, Esq; who lived there in 1634, and after. The epistle to the Book of Husbandry is dated at Kingston, February 1, 1577. Gervase Markham reprinted this work in 1615, 4^{to}, with insertions; intended chiefly to adapt German husbandry to the English climate. [Markham, by the way, appears to be the first English writer who deserves to be called a hackney-writer. All subjects seem to have been alike easy to him: yet, as his thefts were innumerable, he has now and then stolen some very good things, and, in great measure, preserved their memory from perishing.]

Gabriel Plattes may be considered as an original genius in husbandry. By the known times of his life and death, it is pretty certain, that he began his observations in the latter end of queen Elizabeth's reign, and continued them through the reigns of James and Charles I. as also during three or four years of the common-wealth.

As great a genius as this writer was, the public allowed him to drop down dead in London streets with hunger only: nor had he a shirt upon his back when he died. He bequeathed his papers to S. Hartlib; whom a cotemporary author addresses in this manner: "None but yourself (who want not an enlarged heart, but a fuller hand to supply the world's defects) being found, with some few others, to administer any relief to a man of so great merit."—*Letter to Hartlib from Flanders, 1650.*

Another friend of Hartlib's gives Plattes the following character: "Certainly that man had as excellent a genius

in agriculture as any that ever lived in this nation before him, and was the most faithful seeker of his ungrateful country's good. I never think of the great judgment, pure zeal, and faithful intentions of that man, and with all of his strange sufferings, and manner of death, but am struck with amazement that such a man should be suffered to fall down dead in the streets for want of food, whose studies tended to no less than providing and preserving food for whole nations, and that too, as with much skill and industry, so without pride or arrogance towards God or man."—*C. D. in a Letter to Hartlib, 1653. Legacy, pages 183, 184.*

Hartlib, as far as can be learnt, published but few posthumous papers of Gabriel Plattes; and, indeed, an author so extremely poor as this unfortunate person was, would, in all probability, have sold his writings to the booksellers, had they been so far finished as to deserve publication.

The pieces already published are these which follow:

Practical Husbandry improved; or, A Discovery of infinite Treasure; 4to: containing one hundred and twenty pages, 1656.

A Discovery of Subterranean Treasure, 4to, 1638: about three sheets.

Mercurius Latificans, 4to, 1644: twelve pages.

Observations and Improvements in Husbandry, accompanied with twenty Experiments, imparted to Samuel Hartlib by Gabriel Plattes; thirty-two pages, 4to. 1653.

This author had a bold adventurous cast of mind, and seems to have preferred the faulty sublime, in matters of invention, to the faultless mediocrity. His MS. entitled Art's Mistress, contained a series of observations and experiments in agriculture for fifty years, and was in all probability the most valuable in matter, as well as most considerable in size, of all his writings.

In a letter to Hartlib, May 14, 1644, he mentions a work of his, called The Treasure-House of Nature unlocked, and set wide open to the World, &c. Whether this performance was ever printed, is more than I know,

or whether it be not the tract first mentioned in this list, which I am partly inclined to believe.

Samuel Hartlib, a celebrated writer on husbandry in the last century, a gentleman much beloved and esteemed by Milton, in his preface to the work commonly called his *Legacy*, laments greatly that no public director of husbandry was established in England by authority, and that we had not adopted the Flemish custom of letting farms upon improvement. "If it pleases God," says he, "to bless these motions, and that, accordingly, the national husbandry of this common-wealth be improved, we may hope, through God's blessing, to see better days, and be able to bear necessary and public burthens with more ease to ourselves and benefit to human society, than hitherto we could attain to." Preface, page 2, 4^{to}. 1691.

Cromwell, in consequence of this admirable performance, allowed Hartlib a pension of one hundred pounds a year; and Hartlib afterwards, the better to fulfil the intentions of his benefactor, procured Dr. Beati's excellent annotations on the *Legacy*, with other valuable pieces from his numerous correspondents.

This Samuel Hartlib was a German gentleman by birth, and the great promoter of husbandry during the times of the common-wealth, on which account he was much esteemed by all ingenious men in those days. Milton addressed to him his *Treatise on Education*; and Sir W. Petty inscribed two letters to him on the same subject, Lond. 4^{to}. 1647, 1648. Of his pension from Cromwell, on account of his advancing the art of agriculture, we have already spoken.

About the time when this author flourished seems to be an æra when English husbandry rose to high perfection; for the preceding wars had made the country gentry poor, and, in consequence thereof, industrious; though sometimes the reverse of this happens in many kingdoms. But these wise men found the cultivation of their own lands to be the very best post they could be fixed in. Yet, in a few years, when the restoration took place, all this industry and knowledge were turned into dissipation and heedlessness;

heedlessness; and then husbandry passed almost entirely into the hands of farmers.

The famous work attributed to Hartlib, and called the *Legacy*, was only drawn up at Hartlib's request, and, passing through his correction and revision, was published by him: it consists of one general answer to the following query, namely, "What are the actual defects and omissions, as also the possible improvements, in English husbandry?"

The real author of this work was R. Child. To it are annexed various correspondencies from persons eminent for skill in agriculture at that time; as C. D. B. W. R. H. T. Underhill, Henry Cruttenden, W. Potter, &c. as also the *Mercurius Lætificans*, and twenty large experiments by G. Plattes; together with annotations on the *Legacy* by Dr. Arnold Beati, and replies to the animadversions by the author of the *Legacy*.

Hartlib writ a little treatise on Setting Land, which is much esteemed; and some attribute to him Adam's Art Revived, though that work seems to belong more properly to Sir H. Platt,

He also published Sir R. Weston's famous discourse of Flemish husbandry, without even knowing the author's name at the time of the first publication; and afterwards, in order to enlarge and better explain it, annexed Dr. Beati's annotations to it. This is all I know concerning his (Hartlib's) performances in agriculture. He writ, besides, A true and ready Way to learn the Latin Tongue, 4to, 1654. A Vindication of Mr. John Durie, 4to, 1650; three sheets; and published Twisse's Doubting Conscience resolved, 8vo, 1652.

Blythe tells us, that Hartlib lodged and maintained Speed in his house, whilst he composed his book of improvements on husbandry. — *Improver improved*, p. 177.

Discourse of Flanders Husbandry, 4to, 1645. We apprehend the author of this work to be the Sir Richard Weston who was ambassador from England to Frederic V. elector Palatine and king of Bohemia in 1619, and present at the famous battle of Prague; concerning which a
curious

curious relation of his, by way of letter, is still preserved in MS.

His Discourse on Flanders Husbandry, published by Hartlib in 1645, (who then knew not who the author was) contains about twenty-four pages in *quarto*. The Legacy to his sons, which relates also to the cultivation of their estates, consists of three *quarto* pages, and was written on his death-bed in 1645. The discourse has always been looked upon as a capital performance in husbandry.

It is remarked in the Philosophical Transactions, that England has profited in agriculture, to the amount of many millions, by following the directions laid down in this little treatise.

About twenty years ago, a piece was ignorantly published under Sir Richard Weston's name, entitled, A Treatise concerning the Husbandry and Natural History of England, 8vo; which performance is a poor, jejune abridgment of Hartlib's Legacy, of which the true author was neither Weston nor Hartlib, but one Robert Child.

I will now return to the general state of husbandry in England about the time of the restoration, and some years afterwards, when Evelyn in the last century, and Tull in the present, opened a new sphere for the minds of mankind to range in; since which period several good improvements have been made in English husbandry; and various useful hints have been suggested occasionally by Mr. Miller, wherever he had opportunity to consider the culture of artificial grasses. Nor must we here omit our own English Linnæus, Dr. Hill, who, in the Continuation of his Complete Body of Husbandry, has turned his thoughts particularly towards discovering and introducing new sorts of vegetable food for the support of cattle, in imitation of the late practice in Sweden. Considerable attention also has been paid to the ingenious and very curious remarks upon grasses, by Mr. Stillingfleet, who has given us these northern discoveries in more full detail.

In Scotland many ingenious persons have formed themselves into societies for the advancement of agriculture, which, if carried on with zeal and industry, may prove,

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in time, an article of great importance to that nation. Dr. Home has given his countrymen most of the assistance that chemical experiments can afford; and the late Duke of Argyle, with some others, have performed as much, or more, in the practical parts. But concerning the defects and omissions in Scottish husbandry, as also the causes that occasion them, together with the manifold improvements that remain to be carried into execution, I shall refer to a candid and sensible account lately published by a writer of that country, who must be a good judge of the matter in question*.

Ireland, as long ago as about the middle of the last century, began to make no inconsiderable figure in the art of agriculture. The soil, in many places, is rich, deep, and manageable. The land of few countries seems to be more proper for the culture of flax and hemp, and no nation expends more money with foreigners for the materials of sail-cloth, cordage, &c. than England. Now hemp succeeds no where better than in a well-drained morass; and consequently might be raised in Ireland, with great success, and equal profit. I mention only this single instance, because it seems to be of great importance both to Irish and English; being certain, in other respects, that every useful sort of grain or grass might be made to flourish as well in Ireland as in England. Tacitus, with great justice, made much the same remark in antient times: *Solum cælumque, cultus & ingenia hominum baud multum a Britannia differunt.*

Indeed the French, with all their boasted refined politics, prohibit their subjects from making amel-corn into starch and hair-powder, under pretence of always wanting bread; though one pound, thus manufactured, (all expences deducted) sells for more than two pounds of the said native amel-corn reduced to flour, and applied to making bread. But the example here alledged carries
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* Wallace's Numbers of Mankind, page 150—159. See also a Dissertation on the chief Obstacles to the Improvement of Land in Scotland; published at Aberdeen, 8vo, 1760.

with it no sufficient reason why a nation should send its money abroad in order to purchase that which may be raised at home by its own subjects.

Ireland, it must be confessed, had a wretched method of husbandry, and strong prejudices in behalf of that method till about the middle of the last century, when Blythe alone (who then lived in Ireland) was sufficient to open men's eyes by his incomparable writings. But the truth is, that he, and many other English officers and soldiers of Cromwell's army, being enriched by military grants and settlements, first laid the right foundations of husbandry in that kingdom; since which period, a certain spirit of improvement, more or less, has been promoted and carried on with such zeal and constancy by the nobility, gentry, and clergy, that they may seem to cast a silent reproof on the nation that was their first instructor: so that, if they go on thus for one or a couple of centuries more, and are, at the same time, powerfully and generously encouraged, it may perhaps be said, with no small degree of propriety,

Thus old Romano bow'd to Raphael's fame,
And scholar of the youth he taught became*.

In proof of this, the transactions of the Dublin society for encouraging husbandry are now cited by all foreigners in their memoirs relating to that subject †: and having mentioned Blythe during the *interregnum*, it would be injustice in me to overlook a gentleman of Ireland ‡, who, by his generosity and activity, (all circumstances being rightly considered) has done more towards encouraging agriculture, manufactures, and employing the industrious poor, than any subject of superior rank and fortune, either in his own or other countries.

Yet,

* Dryden's Epistle to Congreve, who was a gentleman of Ireland.

† Especially on the subject of raising and managing flax. See, amongst others, the *Memoires Oeconomiques Rurales de Berne*. Tom. I. 160, 387. Tom. II. 305.

‡ Dr. Samuel Madan.

Yet, upon a cool revision of the state of agriculture in Ireland, it will be a great point gained, if the nobility and gentry animate themselves so far as to carry husbandry to such lengths as the nature of present circumstances will admit; which, so long as they continue, will prove an insuperable bar to the bringing culture and commerce to its utmost perfection, in that country.—Nevertheless, even as things now stand, if the soil of this latter kingdom was duly cultivated, and exportation of corn allowed, with a bounty annexed, Ireland might be brought to maintain two millions more of inhabitants than it does at present.

Upon the whole, I can only say, that, if Ireland was incorporated with England, in the manner some have suggested, the *vis unita* of the British empire would be equal, if not superior, to any one power in the world. Nor is it of much consequence to our common parent and sovereign, nor to his subjects, where the strength lies, supposing it can be exerted whenever it is wanted. It is a pleasure to see united kingdoms resemble (in some degree at least) the united kingdom of the universe, where the sun shineth upon all, and the dew falleth upon all."

I wish I could follow this writer a little further, where he gives an account of the state of modern agriculture in the various parts of Europe; but fearing my letter is already too long, I must refer your readers to the work itself for satisfaction.

I am, GENTLEMEN,

Your most humble servant,

Windsor, Berks,
Jan. 8, 1765.

AGRICOLA.

NUMBER VIII.

Of the Usefulness of acquiring a Knowledge of Foreign Practices in Husbandry, with some Hints towards attaining and propagating that Knowledge; particularly recommended to the Notice of the Society instituted for the Encouragement of Arts, Manufactures, and Commerce.

GENTLEMEN,

AGRICULTURE, I believe, is carried to greater perfection in England than in any other country of Europe; nevertheless, we are certainly very far removed from that point of perfection to which we might arrive: nor is this kingdom in general, I apprehend, near so thoroughly cultivated as the empire of China, if we may at all credit the best accounts we have of that region.

I conceive that scarcely half the kingdom is at present in an actual state of cultivation: mountainous and fenny tracks, downs, heaths, moors, &c. form an immense quantity of land, which few, I believe, will think absolutely incapable of culture.

Agriculture, in the finest parts of the kingdom, is not known so perfectly as to render the closest attention to improvement needless or unprofitable. If an exact register had been kept, for a century past, of any tract of land, or farms, displaying the produce of every kind, we should find it in an uniform progression of encrease. The best authorities which curious men have been able to consult, discover the encrease of our growth of corn, which is a palpable demonstration of an improving husbandry: and the experience of many thousand intelligent men will shew us, that we are yet very far from that perfection which we ought to strive to reach.

Nothing can contribute more to spreading a general knowledge in agriculture, and to make known to every part of the kingdom the methods followed by all the rest, than a general receptacle of farming intelligence, published

lished frequently: your *Museum* adopts the proper plan, and, if managed with penetration, must be attended with excellent effects.

But there yet remains a large and important source of knowledge in this branch, which it is impossible your work should near comprehend.

I fancy there are few reflecting men who will assert, that all improvement can come only from ourselves, and that various points of knowledge in agriculture cannot be gained from the practice of foreigners.

The cultivation of the earth may be in a far more flourishing state in this kingdom than in many parts of Europe; but we ought not from thence to conclude, that other nations, who have not the peculiar blessings of liberty and situation which we possess, cannot make great and striking discoveries in agriculture, however poorly they may contribute to their general good.

It is not our superior sagacity to which we are indebted for the possession of so happy a state of tillage; it is to that admirable species of liberty, which gives us a being scarce known in any part of Europe, the substantial husbandman.

However superior we may be in this respect to the rest of Europe, we ought to remark, with attention, the innumerable methods of husbandry practised by the rest of the world, compare them with our own, make experiments of their respective merits, and, without prejudice, adopt all that are good*.

Let us make sober and rational experiment the foundation of our knowledge, and let us determine to admit every method that experiment proves to be better than our own.

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* We observe, that a new pamphlet, entitled *Foreign Essays on Agriculture and Arts*, has been, within these few days, advertised, in the papers, to be published on the first day of February, and to be continued. If this should prove a judicious selection, it may possibly, in some measure, answer the end proposed by our ingenious correspondent. E. O. R.

If this is really the sensible manner of proceeding, our business is to render ourselves acquainted with the practice of foreign countries down to the minutest particulars. But where is this knowledge to be gained? The nobility and men of large fortune travel, but no farmers; and unfortunately those who have this peculiar and striking advantage, this noble opportunity of benefiting themselves and their country, seldom enquire, or even think, about agriculture.

The age at which our British youth travel, is an insurmountable obstacle to the possibility of their country being the better for it. If any one in a more mature age undertakes the tour of Europe, how few give any material attention to the cultivation of the variety of land they are obliged to pass over! If a traveller has the parts and abilities necessary for such observation, fewer still have that degree of knowledge in farming which is necessary to see the advantages of any practice, and the points in which it promises to be serviceable at home.

It must be expected, that those who travel should consult the common advantages resulting from that part of education: a general and polite acquaintance with the knowledge of the times is reasonable; and a man of literature, taste, and sentiment, meets with so much to catch his attention, and please his imagination, in the acquaintance of the *literati*, and the study of that profusion of the productions of the fine arts, so common abroad, that it is not to be expected he will attend much to agriculture.

It must not be thought that a plough will come in competition with the glowing tints of a Correggio; or the breed of a cow, or a sheep, interrupt the ideas of beauty and delicacy raised by the view of the Venus de Medicis.—Travellers must sacrifice to the Graces.—Happy for their country if they would give some little attention to public utility!

It is to me surprising, that among the men of sense and reflection who have travelled, and published their remarks,
so

so few have thought agriculture worthy their observation. Buildings, paintings, statues, relicks, and curiosities have been recorded, criticised, and copied without end. Of all the journals of travels I have read, scarce one gives any idea of the state of agriculture, and the methods of practice followed in the countries it describes.

But the complete knowledge of foreign agriculture, which I could wish was possessed at least by one of my countrymen, and published for general advantage, is not to be acquired by our young nobility and gentry while they travel on the plan at present generally adopted; nor is it to be met with in any book of travels hitherto published.

Let us suppose a proper person to undertake the tour of Europe, or a part of it, merely to render himself perfectly acquainted with every particular, the least worthy of observation, in the practice of agriculture, of every country through which he passes. Such a person, however he might casually amuse himself in a city, ought to deem *the country* the scene of his travels, and every where take up his abode in a village. He should, in general, avoid the roads pursued by travellers, and take his route through provinces where foreigners seldom appear. He should be very slow in his motions, residing some time in any place where he finds matter for observation. If any thing striking occurs in the practice before him, he should attend the culture of the lands, the sowing and harvest; and manage his route in such a manner, that this plan may not occasion an unnecessary residence, nor a needless distant removal from one place to another. The soil should always be an object of his attention, in every variety, and the grain, or grass, which seems best to suit it. He should make drawings of every machine and implement of husbandry that differs from those of his own country, and observe particularly the respective methods of working them. He should procure seed of corn and grass, and some of the breed of remarkable cattle, sending them to England, with directions on what land to be sown, and on what grass to be fed. In some countries
this

this may be prohibited, but it is allowed in many: in a word, the whole oeconomy of agriculture in every province should be observed and minuted; the manner in which lands are rented, the covenants, the method of cultivating them where the landlord farms, and all upon his estates are either his servants or his slaves. It would not be amiss to remark also the methods of making and repairing the roads in most countries; all the effects of the laws and police respecting the poor; not to study them in books, but to view their effects among the very people concerned. Some hints might possibly be caught, worthy the attention of the British legislature itself.

On such a plan, I should think it advisable to take the route of Holland, Flanders, French Flanders, Lorraine, and the provinces adjoining; Champagne, Burgundy, Franche Comté, Lyons, and then a-crois to Normandy, Brittany, Orleanois, Guienne, Languedoc, Provence, Dauphiné, Gascony; then to enter Spain, and travel towards Gallicia, whose inhabitants are more industrious than most Spaniards, and return to Catalonia and Valencia, the latter province being the garden of Spain, and the natural productions well worthy the attention of a farming traveller.

I have heard Mr. Mercier of Bath, who served in Spain under the earl of Peterborough and lord Gallway, and who has resided in most parts of Europe, declare, that Valencia was the finest country he ever beheld, and the most plentiful one to forage in; that it abounds with vast quantities of sweet, nourishing grass, which grows to the height of four feet; besides other species equally advantageous. Those who object the great difference of climate between England and Spain, should remember that many of our fruits and most useful plants are the natural inhabitants of much warmer countries; and that lucerne is traced even to the hottest climes of Asia.

The rest of Spain might be omitted. I would not be understood, however, to imply that it contains nothing worth observation. Not a country can be named but something

Something useful might be learned in it by a traveller, who made such a scheme as I sketch his business.

Returning through France; the Alps, Savoy, and Switzerland, should next engage his attention. The latter country, I am informed, will present to an attentive traveller many particulars in agriculture, and the breeding and management of cattle, well worth a minute observation. The principal territories in Lombardy should next be visited; the southern parts of Italy, and particularly Sicily: that island is well cultivated, and, doubtless, some useful knowledge might be gained from its inhabitants.

If the plan was found practicable, which I am informed is really the case, the best way to return towards Germany would be by the Turkish provinces on the Adriatic Sea, and enter the Austrian duchies, making the whole tour of Germany, particularly those parts of it which border on the great rivers, and the Prussian dominions, the peasants in which are reported to be as happy as in most parts of Europe, excepting our own, and that owing to the amazing regularity of the government, and the strict execution of justice. The tour of the north should be prosecuted through Poland, Livonia, Finland, Russia, Sweden, and Denmark.

In this whole tour, an exact and minute journal should be kept of every remark made on the infinite variety of objects that would occur, all the information that could be gained from the inhabitants of every country, and ample descriptions of the whole process of cultivation where it was found worthy recording; and the author, on his return home, should communicate this extensive work to the public, as a general source of knowledge and improvement, and a monument of his own abilities, his industry, and application:—the most useful book of travels that ever appeared in the world!

Fully am I persuaded, that was such a tour as this executed by a proper person, or rather persons, great and important advantages would result from it. Species of plants, methods of cultivation, and many implements
and

and machines at present totally unknown in England; would be discovered, and, after experiments, adopted. I may be mistaken, but in this light it strongly appears to me.

So great and arduous an undertaking, to be perfectly executed, would require peculiar abilities and advantages in the person who attempted it.

He ought, in the first place, to have a competent knowledge of the methods of cultivation used in general in England; and this knowledge should result not alone from books, but also some years practice, that he might be well acquainted with the advantages and defects of our present modes of husbandry, and our principal implements used in them: and that he might readily perceive wherein foreigners have the advantage of us, he should be a man of penetration, quick conception, thoughtful, and attentive; the scope of his travels would require vigour and activity: The variety of people he would have dealings with would render a pliancy of disposition, patience, and dexterity, equally important. He should be a master of the principal European languages. He ought to have such a proficiency in drawing as to be able to sketch, in the most accurate manner, machines of all kinds, and plants. A knowledge of botany would also be necessary for the description of the new plants he might think deserved his attention: and, to crown all, he should have an ample revenue for numerous purchases, and to smooth innumerable difficulties.

These qualifications, I believe, gentlemen, you will allow are necessary; but where are they to be found?

The utter improbability, or, I may say, impossibility of this is also evident: but I do not conceive that the advantages resulting from the scheme should be lost for want of some particulars to render the execution the more complete. A practical knowledge of English farming, and a slight acquaintance with drawing, would be absolutely necessary, joined with as much penetration, quickness of parts, and solidity of reflection and conduct, as could be found. It is very improbable that such a

man

man, if he had an ample fortune, would engage in the undertaking, and equally unlikely that a rich man would be properly qualified were he willing.

Much, in such cases as these, if they are deserving attention, is to be hoped from the munificent public spirit of the society for promoting arts: no where can better judges be found of a proper person to execute such a plan, or, when found, to give him proper instructions. I flatter myself, that we shall one day see their bounty exerted in executing some scheme of public utility of the same nature as that I have sketched: their improvements on the ideas of individuals in such cases will doubtless be striking; and, however incomplete this essay may be, was the plan ever to come within their attention, it would certainly turn out to the benefit and instruction of the whole kingdom.

I remain, GENTLEMEN,

Bradfield, near Bury, Your constant reader, &c.

Dec. 2, 1764.

Y:

P. S. Since I wrote the above letter, I have read, with that attention so excellent a book deserves, Dr. Harte's *Treatises on Husbandry*. This most penetrating author has proved clearly the great advantage which must attend an accurate observation of the foreign methods of husbandry: he speaks from his own experience, having travelled like a true philosopher, and a good citizen. It is too like presumption in me to venture these sheets to the press after the publication of such a work, which suggests so much more than it expresses; but, as I have been particular in the project of dispatching a proper person abroad, and as I do not remember the Doctor mentions such a scheme, I am tempted to proceed this once in a path so lately trodden by a very *Magliabechi* in agriculture.

NUMBER IX.

An Enquiry respecting the Prices of the Implements used in the new Husbandry.

GENTLEMEN,

IN your note, page 294, Vol. III. in answer to my request concerning a drill-plough and horse-hoe, you tell me I should have mentioned what sort of plough. As I am totally unacquainted with the machine, I can only in part explain my meaning: such an one as is used to sow wheat, barley, or oats, with a change of hopper for smaller seeds, such as turneps or lucerne: the late improvement on Mr. Tull's. Please to inform me of the name and place of abode of some ingenious wheel-wright who makes them; also, where the Rotheran-plough is to be had, and the prices of each*.

I repeat this request, not only for my own satisfaction, but for that of several farmers and gentlemen in this neighbourhood. If you could procure, of some sensible, experienced person, a catalogue of all the implements used in the new husbandry, with their uses and prices, and where to be had, it would be a most valuable article to every inquisitive person in this part of the world.

I remain, GENTLEMEN, &c.

Bradfield, near Bury,

Y.

Dec. 4, 1764.

Erratum.

* We should be much obliged to our correspondent E. S. who dates his letters in Middlesex, if he would inform our readers who he employs to make his drill-ploughs, as we are not just now acquainted with an artist whom we could venture to recommend for this purpose; but if such should in future come to our knowledge, we will take care to inform the public of it. We also request E. S. to satisfy Y. as to the price of the implements used in the new husbandry. With regard to the Rotheran-plough, we will soon give such an engraved representation of it as will enable any ingenious plough-wright to make it. E. R. O.

Erratum. In my last letter, Vol. III. page 287, line 4 from bottom, for "the carriage is worth *a shilling* more," read "the carriage is worth *two shillings* more."

NUMBER X.

Some Errata in Number LXXIV. Vol. III. corrected.

GENTLEMEN,

I See, by a note on the wrapper of your last pamphlet, that you propose publishing a letter of mine in your next Number. Please to insert at the same time the following *errata* in my letter, Numb. LXXIV. Vol. III. which are to be thus corrected.

Page 320, for 45*l.* (the total of the sixth year) read 55*l.*

Page 323, for 87*l.* (the amount of sixty coomb of wheat) read 43*l.* 10*s.*

For 115*l.* (the total of the ninth year) read 71*l.* 10*s.*

For 73*l.* 13*s.* 6*d.* (the profit of that year) read 30*l.* 3*s.* 6*d.*

For 45*l.* (the expences of the sixth year) read 55*l.*

For 40*l.* 10*s.* (the profit of the sixth year) read 30*l.* 10*s.*

Page 324, for 40*l.* 10*s.* (the profit of the sixth year) read 30*l.* 10*s.*

For 73*l.* 13*s.* 6*d.* (the profit of the ninth year) read 30*l.* 3*s.* 6*d.*

For 198*l.* 5*s.* 9*d.* (the total produce) read 144*l.* 15*s.* 9*d.*

For 141*l.* 9*s.* 9*d.* (the total profit) read 87*l.* 19*s.* 9*d.*

For "which is 15*l.* 14*s.* 8*d.* *per annum*, or rather better than 15*s.* *per acre*," read "which is 9*l.* 15*s.* 6*d.* *per annum*, or 9*s.* 9*d.* *per acre*."

Page 325, for Profit - - - - - 248 13 9

Loss - - - - - 56 16 0

191 17 9

which is twenty-one pounds six shillings and five-pence *per annum*, or better than a guinea *per acre*,

K 2

Read

	<i>l.</i>	<i>s.</i>	<i>d.</i>
Read, Profit as above	-	-	- 144 15 9
Add forty-eight bushels, at 6 <i>ol.</i> but			
deduct 9 <i>l.</i> 12 <i>s.</i> for threshing, at			
4 <i>s.</i> <i>per</i> bushel	-	-	- 50 8 0
			<hr/> 195 3 9
Loss	-	-	- 56 16 0
			<hr/> 138 7 9

which is fifteen pounds seven shillings and six-pence *per annum*, or fifteen shillings and four-pence *per acre*.

If these errors escaped my pen, I am very sorry for it; but I cannot avoid remarking how much greater they make the difference of profit between arable and pasture land, the first being but nine shillings and nine pence *per acre per annum*, and the latter one pound three shillings *per acre per annum*.

In your note signed E. R. I observe you think the price of the corn undervalued; but if you compare the prices one year with another, I believe you will find that wheat at fourteen shillings, fourteen and six-pence, and fifteen shillings *per coomb*, (the price I have calculated at) is no *low rate*.

I well know that barley at seven shillings and six-pence, and eight shillings, cannot be under the mark, but rather above it. Oats I have reckoned at eight shillings, which is certainly above the mean price considerably.

I will also observe that I have a field of twenty acres, which is just such a one as that described. The expenses on tilling it I lay at much the same sums as in the estimate; and for some years I have *lost* considerably by this field, though I have grown wheat, barley, oats, and clover on it; but the corn off such land, especially barley, will not fetch near so good a price as the produce of better fields.

I am, GENTLEMEN,

Bradfield, near Bury,

Your's, &c.

January 6, 1765.

Y,

P. S. In a short letter which I lately sent you, I repeated my desire to be informed of the price of some instruments

instruments in the drill-husbandry. As I have since read Mr. Mills's Complete Practical Treatise, in four volumes, I can better explain myself.

I mean of M. de Chateauxvieux's drill-plough, and double and single cultivators, and M. du Hamel's drill, and the Rotheran-plough; also where a workman is to be found that can make them².

I cannot here avoid observing that Mr. Mills has included his translation from Du Hamel, published in 4to, in this new 8vo work; so that the purchasers of them both pay twice for one. This is treatment I, among others, think very unfair, and too much like a bookseller's job, in a work which is totally taken from other authors; and not a syllable from Mr. Mills's experience.—Please to insert this in your next.

N U M B E R X I.

On transplanting Trees in Summer, whilst the Sap is in Motion.

GENTLEMEN,

SEEING in your First Number of the *Museum Rusticum*, &c. for September, 1763, a letter signed S. L. relative to an experiment, made in the year 1757, of transplanting trees in the summer, when the leaf and sap are in motion, I beg leave to trouble you with a fact of that kind, which has happened lately within my knowledge.

In making some alterations in an old garden, I ordered a south wall to be pulled down, and the peaches, &c. to be grubbed, of which there were a great many.

This

* We apprehend M. de Chateauxvieux's drill-plough to be much too complex a machine ever to be brought into general use; it is besides very expensive in its construction: as to the rest, we must refer this correspondent to our note on his last letter, and need only here repeat, that we shall endeavour to give him all possible satisfaction, and shall not fail making the necessary enquiries. E. R. O.

This was accordingly done, at the time when the trees were, to my certain knowledge, in full bloom; and an old workman, who had a great regard for the trees, which he remembered the planting of, took up a nutmeg peach, and planted it in his own garden, when, contrary to all expectation, it not only lived, but flourished, and flung out shoots more than a foot long that very summer, and is now in as fair a way to blow again as the old trees that remain against the walls.

This appears to me contrary to all experience as well as theory, and therefore may afford room for the ingenious to exercise their talents upon.

I have this year transplanted a very old green gage plum, which hitherto has all the appearance of growing; and if you give any place to what I have communicated, I shall probably trouble you with the success of that and some more experiments.

I am, GENTLEMEN,

Your very humble servant,

A. Z.

Turk's-Head Coffee-House, Strand,

January 8, 1765.

N U M B E R X I I .

On an Experiment in the Culture of Burnet, to be made at the Grange, in Hampshire, the Seat of the Earl of Northington, by his Lordship's Order.

GENTLEMEN,

THE culture of the burnet, as practised by Mr. Rocque, of Walham-Green, having been more than once strongly recommended by your correspondents, many practical husbandmen have from time to time made experiments on the utility of this grass. Some of these experimentors have, as I have been informed, succeeded very well, whilst, on the other hand, many have miscarried, whether owing to any fault in the method, or
mistake

mistake in the application, I presume not to say; but be it as it may, every one pronounces his judgment on this much-talked-of plant in conformity to the good or bad success which he has himself met with.

This occasions many disputes among farmers, and it is as yet impossible to know who is right, and who wrong; however, the uncertainty will soon be removed, for a patriotic nobleman of the first distinction, a lover and encourager of husbandry, has undertaken himself to make the experiment.

The right honourable the earl of Northington, lord high chancellor of Great-Britain, is a purchaser of your work. This worthy nobleman, having heard many arguments for and against the culture of burnet, has, at his seat called the Grange, in Hampshire, set apart an acre of land, on which burnet is to be raised in the method prescribed by Mr. Rocque's letter inserted in your collection. No care will be wanting in duly preparing the land, sowing the seed, and attending to the young plants after they are come up. If this experiment meets with the wished-for success, and the value of the crop, in any considerable degree, exceeds the expence of cultivation, the farmers may then, without fear, proceed to sow it as a *succedaneum* for clover, saintfoin, or ray-grass, and will, in all probability, find their account in it. I hope the result of this important experiment will be communicated to you for publication, as the farmer will thereby be enabled to judge whether it will be prudent for him to adopt the culture of burnet or not.

London,

A. B.

Jan. 12, 1765.

NUM-

NUMBER XIII.

A Letter to Y. Z. Esq; sent with an Account of some valuable-Experiments, to be inserted in the Museum Rusticum; with a Hint towards offering a Premium for the Invention of a Machine for doubling Worsted-Yarn.

S I R,

HEREWITH I have sent you the experiments made on the encrease and decrease of the weight of wool in fleeces, after it is shorn; together with experiments on the expence of burning candles of different sizes, and also of lamps. If you judge them to be of any use, you are welcome to make them public, and to make what remarks upon them you shall think proper.

I will send you my new method of working the crane-wheel, which is performed with the greatest possible power wrought by man, and at the same time with the utmost safety to the person that works it; but as this requires a drawing to make it rightly understood, I could not get it done to come with these; but you shall have it in a few days*.

In looking over the disposition of the premiums mentioned at the end of the Volume of the *Museum Rusticum* you were so kind to lend me, I observe fifty pounds given for a new-invented spinning-wheel: I should be obliged to you if you could direct me where to find a description of it, (if any such is made public) and in what respect it excels those generally made.

There is one thing very much wanted in the manufacturing of worsted goods, and I never heard that it was attempted by any person, which is a mill, or machine, for doubling (that is, winding two threads together on a bobbin, in order to be thrown, or twisted together, to make two-thread, or double work).

The

* This, together with a plate to explain it, will be inserted in our next publication. E.

The great difficulty to be surmounted I take to be this, *i. e.* when one of the threads happens to break, (as this often is the case) the other thread should at that instant break also; or, (which will answer the same end) the bobbin on which the double yarn is wound should stop at the instant the single thread breaks, whilst all the rest of the bobbins keep working on; for when only one of the two threads is broke, and the bobbins keep moving on, the single thread remaining unbroken is wound upon the bobbin instead of a double thread, by which means the work is imperfect, and a good deal of time, and often a pretty deal of yarn, lost before the bobbin can be put to rights.

This doubling of yarn requires the greatest care, and is the most expensive operation of any in the worsted manufactory, and cannot be entrusted to children, but must be done by steady, careful, grown-up persons, whose wages are a great deal more than that of children; therefore, if a machine could be contrived to perform the work perfectly and well, a good sturdy, active boy would do as much as twenty or thirty women, and at a very inconsiderable expence; which would enable the manufacturer to render his commodity cheaper, and serve the foreign markets upon more reasonable terms.

Therefore I should think, (with all possible deference to better judges) that it would be very proper to offer a premium for the most perfect and most simple machine that could be produced to perform doubling of yarn in large quantities, and in the most perfect manner, entirely free from the defects above mentioned*.

I suppose, Sir, by this time, I have sufficiently tired your patience, and therefore only beg leave to add that I am, with the greatest respect,

Your much obliged,

Harborough,
January 6, 1765.

And most obedient servant,
S. R.

* We are greatly obliged to Y. Z. for communicating to us this and the three following pieces, and have complied with his request in not printing either his name or that of his correspondent. E. R.

NUMBER XIV.

An Account of Three Experiments made to discover whether Wool, laid up in the Fleece, alters in its Weight.

IT has been a matter of some doubt amongst graziers, farmers, and dealers in wool, whether or not wool, after it is shorn and laid up in the fleece, alters in its weight. The following experiments were made to decide this question.

EXPERIMENT I.		EXPERIMENT II.		EXPERIMENT III.	
This wool was shorn dry, and laid up in a two-pair-of-stairs room, on a boarded floor.		This wool was shorn dry, and laid in a lower room, with a brick floor one foot above the floor.		This wool was shorn dry, and laid up in a two-pair-of-stairs room, with a boarded floor.	
	Weight lb. oz.		Weight lb. oz.		Weight lb. oz.
1746, Aug. 10	76 6	1746, Oct. 15	100 4	1756, Aug. 30	36 9
Sept. 7	76 8	Nov. 18	101 2	Nov. 19	37 2
Oct. 14	77 11	1747, Jan. 26	102 8	1757, Feb. 19	37 12
Nov. 18	78 0	Feb. 20	102 11	Mar. 24	37 6
1747, Jan. 26	80 0	Mar. 23	102 9	April 1	37 4
Feb. 20	80 4	<p>The weight increased from October 15, 1746, to February 20, 1747, as 100 to 102½.</p> <p>N.B. It is something difficult to account for this parcel of wool not increasing more in its weight, as it lay so near the ground floor; but very probably the air had been very damp and raw from the time it was shorn till the 15th of October, 1746, when it was first weighed, so that the wool had then very likely gained weight considerably.</p>		Dec. 21	36 14
Mar. 23	79 8			May 2	36 13
Apr. 18	77 13			June 1	36 8½
June 24	76 8			Dec. 13	36 4
July 28	76 8			July 8	36 1½
Sept. 16	75 15			Dec. 27	35 12
Nov. 2	78 1			Sept. 30	36 4
Dec. 8	78 14			1758, Jan. 25	37 11½
1748, Feb. 15	79 1				

The weight was increased from August 10, 1746, (when it was first laid up) to February 20, 1747, in the proportion as 100 to 105.

The weight of this wool increased from the time it was laid up, August 30, 1756, to Feb. 19, 1757, as 100 to 103½.

N U M B E R X V.

Experiments to determine the real and comparative Expence of burning Candles of different Sorts and Sizes, as they are commonly made at Market-Harborough, in Leicestershire.

	Numb. of candles in one pound.	Weight of one can- dle.	The time one can- dle lasted.	The time that one pd. will last.	The expence in twelve hours when can- dles are at 6s. per dozen, which also shews the proportion of the expence at any price per dozen.
		Oz. Dr.	Hr. Min.	Hr. Min.	Farthings and rooth parts.
A small wick	18½	0 14	3 15	59 26	4.85
A large wick	19	0 13½	2 40	50 34	5.70
	16½	0 15½	2 40	44 2	6.54
	12	1 5½	3 27	41 24	6.96
•	10½	1 8	3 36	38 24	7.50
•	7½	2 1	4 9	32 12	8.94
•	8	2 0	4 15	34 0	8.47
	5½	2 13	5 19	30 15	9.53
	Mold Candles.				Mold candles at 7s. per doz.
	5½	2 12	7 20	42 39	7.87
	4	4 0	9 3	36 20	9.28

N. B. The time that one candle lasted was taken from an average of several trials in each size.

 NUMBER XVI.

Experiments to ascertain the Expence of burning Chamber-Oil in Lamps with Wicks of various Sizes.

A Taper lamp, with eight threads of cotton in the wick, consumed in one hour $1\frac{3}{8}$ oz. of spermaceti oil, at two shillings and six-pence *per* gallon: the expence of burning twelve hours is 4.57 farthings.

N. B. This gives as good a light as the candles of eight and ten in the pound, in the last Number marked *. This lamp seldom wants snuffing, and casts a steady, strong light.

A taper, chamber, or watch lamp, with four ordinary threads of cotton in the wick, consumes .1664 oz. of spermaceti oil in one hour: the oil at two shillings and six-pence *per* gallon, the expence of burning twelve hours is 2.34 farthings.

N. B. The above-mentioned taper lamps (which I esteem to be constructed on the best principle of any, *viz.* on the ascent of fluids in capillary tubes) are made in great perfection by Mr. Naish, tin-plate-worker, at the Plume of Feathers in Aldersgate-street, London.

NUMBER XVII.

Benefit of folding Hogs on Wheat.

GENTLEMEN,

I Have seen, in your collection, many arguments for and against folding sheep on wheat, in order to manure the crop; but I do not remember that a word has been said of the benefit of folding hogs on wheat, which your readers may be assured has been practised more than once to advantage.

A brother

A brother of mine, who many years occupied a farm not far from Dunstable, the soil of which was chalky, crumbly, loose and light, having sown a field with wheat, determined to fold his hogs, of which he kept a great number, on it. Accordingly, he got some strong hurdles, and began, soon after it was sown, to try the experiment. Every thing went on extremely well; the hogs dropped a considerable quantity of dung upon the land; and, what was of still greater service, they trod the loose parts of the soil so close that it did not hove in the summer, and none of the wheat was root-fallen, as it frequently before used to be.

The crop he got by this experiment was very considerable; and he approved so much of folding his hogs, that he continued the practice for several years, till he died.

I have often heard him speak greatly in praise of his discovery, as he called it; saying, that his hogs did the land much more service than sheep could do: but then the practice of folding them is something more troublesome, as every hog must be well ringed, or they will be apt to root up the earth, and hurt the crop.

I have since heard of other farmers who have also folded their hogs with the same success; so that I should think, where it is convenient to the farmer to keep a large number of hogs, he could not do better than apply them to this use.

I should be glad to see the thoughts of some of your correspondents on this matter; and am,

GENTLEMEN,

Your humble servant,

Bishopsgate-Street,
Jan. 2, 1765.

A. L.

NUMBER XVIII.

To the Editors of the MUSEUM RUSTICUM.

GENTLEMEN,

AS you have, in a preceding Number of your useful work, desired an account of the prices of farming-implements, and husbandry-labour, in the different counties of England; being a promoter of your undertaking, I send you the following account of the different implements, labour, and price of grain, hoping, as I have set an example, it will be followed by other gentlemen in the remaining counties of England*.

Prices of Implements of Husbandry, Corn, and Farming Work, in the North Part of Hertfordshire, about Hitchin, Baldock, and Stevenage, by an old Correspondent.

A waggon complete, from 16 to 20*l*.

A cart complete, from 8 to 10*l*.

A two-wheeled plough complete, with draught-chain, and splinter-bars, or whipple-trees, 3*l*.

A wheat two-wheeled sowing-plough, as the same wheels serve for both, 1*l*. 1*s*. 6*d*.

A foot, swing, or dray plough complete, 1*l*.

A roller complete, 15*s*.

A five-barred harrow *ditto*, 17*s*.

A four-barred harrow *ditto*, 15*s*.

A three-barred harrow *ditto*, 12*s*.

First ploughing *per acre*, 6*s*.

Second

* We acknowledge ourselves much obliged to this gentleman, and hope to receive many such letters from our correspondents in all parts of the kingdom. E.

Second ploughing *per* acre, 5s.

Harrowing *per* acre, 6d.

Rolling *per* acre, 4d.

Hoeing turneps *per* acre, 4 to 5s.

Hockling, or cutting up and raking haulm, 2s. 6d. *per* acre.

A harvest-man has *per* month from 33 to 40s. and his diet.

A ploughman, for a day's work, 8d.

A labourer, 1s. *per* day and small beer.

Price of threshing *per* quarter, wheat 2s. barley 1s. oats 9d. peas 1s. 4d.

Price of horses, from 5 to 15*l*.

Price of cows, from 3 to 8*l*.

Price of sheep, from 10 to 20s.

Hogs, from 5 to 40s.

Wheat *per* load, 30 to 35s. Five bushels make a load, and eight loads, or forty bushels, a waggon-load.

Barley, 24s. *per* quarter.

Oats, 16s. *per* quarter.

Peas, 17s. *per* load.

Thetches, or vetches, 25s. *per* load.

Malt, 4s. 6d. *per* bushel.

Note, Our bushel is nine-gallon measure.

Turnep-feed, 3d. *per* pound.

Red clover-feed, 4d. *per* pound.

Trefoil-feed, 2d. *per* pound.

Cinquefoil-feed, 4s. *per* bushel.

Wheat-straw, 10s. *per* load.

Barley and oat straw, 6s. *per* load.

Cinquefoil-hay *per* hundred, 2s. 6d.

Clover-hay *per* hundred, 2s. 6d.

Thatching *per* square, yelming and serving included, 2s. 6d.

A carpenter *per* day, 1s. 8d.

A bricklayer *ditto*, 1s. 10d.

Brick at the kiln, 17s. *per* thousand.

Plain tiles, 17s. *per* thousand.

Pan

80 MUSEUM RUSTIGUM, &c.

Pan tiles, 10s. *per* hundred.

Lime, 6d. *per* bushel.

Tiling lath, 2s. 10d. *per* bunch.

Plaistering lath, 1s. 5d. *per* bunch.

Hurdles *per* dozen, 8s.

Faggots, from 6 to 16s. *per* hundred.

Making, plashing, and laying live hedges, and ditching, 4d. *per* pole of sixteen feet and a half.

I am, GENTLEMEN,

Your humble servant,

January 17,
1765.

R. H—DE,
Miles et Agricola.



Museum Rusticum, &c.

For FEBRUARY, 1765.

VOLUME the FOURTH.

NUMBER XIX.

State of the Expence of a hoed Crop of Wheat, and the Profit of it compared with that of the common Husbandry.

GENTLEMEN,

I Propose in this letter to state the expence of a hoed wheat-crop. If this is done in any place where the price of labour is known, it will be easy from thence to calculate the expence of such crops in other places.

When wheat is to be horse-hoed, it is planted upon three-bout ridges, about four feet and eight or nine inches broad. If the soil is poor, they may be made broader, but should not be much narrower, otherwise there will not be room enough to plough the intervals. Two rows of wheat, about ten inches asunder, are drilled upon the top of each ridge, and then the intervals or spaces between the double rows will be about three feet and ten inches wide.

For the first crop the land should be well prepared, and very clean: it will therefore cost more than the following

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M

crops;

crops; and if the land is not in good heart, the first crops will be the smallest, for hoeing greatly improves it. The following estimate is of the succeeding crops.

The necessary culture for these is, once ploughing in autumn, to form the new ridges for the next crop. This may be done with three horses; for the intervals, by frequent hoeing, are kept in fine tilth, and are ploughed at one bout; and the middle of the ridges where the last crop stood, being only the breadth of two narrow furrows, are easily ploughed at another bout; so that these ridges, which in common ploughing required three bouts with four horses, are now ploughed at two with three horses.

The intervals, after the corn is planted, are hoe-ploughed at one bout, to or from the rows. They are usually thus ploughed four times, once in the beginning of winter, and three times afterwards in the spring and summer.

The ten-inch partitions, or spaces, between the rows of wheat, are hand-hoed about the end of March: once is generally sufficient, because the wheat soon afterwards spreads, covers the partitions, and keeps down the weeds. The rows are also to be weeded. This is all the ploughing and hoeing that is commonly necessary till harvest. But as in some years it may be proper to plough the ridges in autumn at five or six furrows, or plough them twice, sometimes to hoe-plough the intervals more than four times, or to give them a trench-ploughing, where the staple is deep enough to admit of it, I shall make a full allowance for these, and charge two ploughings and six horse-hoeings every year.

The hiring price in some parts of Middlesex for ploughing a strong loam the first time, in the common way, is seven or eight shillings an acre; I shall say eight shillings. They work about eight hours, and plough about an acre a day with four horses. The price of the labour may be thus distinguished: to the ploughman twenty-pence, and boy eight-pence a day, including their beer; and then the horses and harness, &c. will come to seventeen-pence a day each. Twice ploughing therefore
in

in autumn, with three horses, comes to eight shillings and nine-pence.

The tops of the ridges are to be rolled with a light roller, or harrowed once or twice with two very light harrows, to break the clods, and lay the tops of the ridges smooth for drilling. The harrows are fastened together by a pole; and a horse, walking in the furrow, draws the two harrows, one upon each ridge. A rolling in the same manner is also useful in the spring, when the earth is pretty dry, and before the partitions are hand-hoed. These rollings and harrowings, of two ridges at once by one horse, are done at a small expence; and not being necessary every year, may cost about four-pence: but to make the total an even sum, I shall charge for them (and uncovering the plants, if any clods happen to fall upon them at the first hoe-ploughing) seven-pence half-penny *per acre*.

The usual quantity of seed is three pecks, and if it costs five shillings and six-pence *per bushel*, is four shillings and three half-pence *per acre*. The drilling is performed by a man and boy, and one horse. They may drill six acres a day: I shall say but five, which is nine-pence *per acre*.

The intervals should be kept in fine tilth: they are hoe-ploughed at one bout: three horses are sufficient for the first two hoeings, and two for the rest. I shall reckon three for each hoeing, and then six hoeings come to thirteen shillings and two-pence.

The price for hand-hoeing of beans the first time is about five shillings *per acre*; I shall call it six: and as the ten-inch partitions, and about two inches on each outside of the rows, is the whole to be hand-hoed, (for the hoe-plough does the rest) these are about one fourth part of the ridge, and should be done for eighteen-pence an acre: but it is a good way to agree with the hoers to cleanse the rows also of weeds; and as these ought to be well done, they expect something more than for common work, and they will cost near half a crown *per acre*.

For reaping, the prices are various; from five or six, to ten shillings *per acre*; at a medium, eight shillings is a high price. The drilled wheat, having scarcely any weeds in it, and standing upon only about a fourth part of the ridge, is easier and much quicker reaped than sown wheat, and not really worth above half the common price; but for the above reason, I shall allow, for reaping and carrying, six shillings *per acre*.

Wheat-straw is a valuable article in the neighbourhood of London; and the straw, chaff, &c. might be reckoned here to pay for threshing and carrying the corn to market: where it is otherwise, an allowance is to be made. And as the distance from the market is uncertain, I shall charge the carrying out, and at market, a shilling *per quarter*, besides the value of the straw.

Some estates are tythe-free; others pay in kind; or a *modus*. I shall reckon the tythe at four shillings *per acre*.

Suppose the rent is sixteen shillings *per acre*; there remain to be added the taxes or rates payable by the tenant, which, at two shillings in the pound-rent, come to nineteen-pence *per acre*.

I reckon nothing for dung or manure; for land that is proper for wheat, allowing sufficient intervals and hoeing, requires none. If the wheat of the first crops is weak in the spring, a top-dressing of the rows will be of service, or afterwards, if the proper hoeings have not been given the preceding year: but this seldom happens; for hoeing makes the plants strong, and if then also top-dressed, they would be in danger of lodging.

The whole expence, at these prices, of horse-hoed wheat, is, *per acre*, as follows:

	<i>l.</i>	<i>s.</i>	<i>d.</i>
Two ploughings in autumn, with three horses,	0	8	9
Harrowing, seed, and drilling	0	5	6
Six hoe-ploughings of the intervals, with three horses	0	13	2
		<u>1</u>	<u>7 5</u>

Hand-

		<i>l.</i>	<i>s.</i>	<i>d.</i>
	Brought over	1	7	5
Hand-hoeing, weeding, and harvesting	—	0	8	6
Carrying out twenty bushels, and at market, (besides the value of the straw and chaff) at one shilling <i>per</i> quarter	—	0	2	6
Tythe, rent, and taxes	—	1	1	7
		3	0	0

This is the whole expence, supposing the soil to be a strong loam, the wages high, and the horses hired; but when done by the farmer's own horses, or the soil lighter, and they work more hours in a day, the expence will be a great deal less, as we shall see below: in some places it will not much exceed half this sum.

It has been already shewn, that one hundred acres of horse-hoed wheat, much of it a light, poor soil, produced near twenty bushels *per* acre; and that a strong soil, by a medium of twenty hoed crops, produced about twenty-four bushels *per* acre, both nine-gallon measure; and therefore we might reckon here a middling crop about twenty-four bushels: but to avoid all suspicion of partiality, I shall suppose that a good loam may, one year with another, produce only the least of these, or twenty bushels *per* acre.

The mean price of wheat at Windsor-market, for the last twenty years, ending at Michaelmas, 1762, is nearly four shillings and eight-pence three farthings *per* bushel, (as appears by the account, page 130, &c. of your Second Volume) and twenty bushels, at this rate, come to four pounds fourteen shillings and seven-pence: so the profit of the horse-hoed wheat is one pound fourteen shillings and seven-pence *per* acre, or above two rents.

Your ingenious correspondent Y, having in his letter, Vol. III. p. 318, stated the produce and expence of twenty acres of arable land for nine years, according to the course of husbandry practised in his neighbourhood, I shall, by way of comparison, calculate the profit of these twenty
acres,

acres, supposing they had been under crops of hoed wheat during these nine years.

I reckon, from your correspondent's account, the wages of his ploughmen to be about fourteen-pence, and a boy four-pence a day, (if not allowed beer) and the horses a shilling a day each, in all five shillings and six-pence, besides repairs: and if they work more than eight hours, his land being lighter than the above, they may plough about an acre and half a day, which brings the price for ploughing to near his reckoning of four shillings *per* acre. If this is not exact, he will rectify it. I shall state the ploughings and horse-hoings in this proportion, and allow three horses, though fewer will do in this land. The rent-charges, I suppose, include the tenant's taxes; if not, they are to be added to the expence. As the tythe is not mentioned in his account, I do not charge it here. The other *items* are computed in proportion to his, and the above, state of the expence; and as I abated four bushels in the above crop *per* acre, I shall do the same here, and reckon a middling crop of hoed wheat at only eighteen bushels; his producing, by a medium of three crops, twenty-two bushels and two fifths *per* acre. The expence of a horse-hoed acre of this land will be nearly as follows:

	<i>l.</i>	<i>s.</i>	<i>d.</i>
Twice ploughing in autumn, with three horses, and harrowing	—	—	0 3 0½
Seed three pecks, (fifteen shillings and four-pence <i>per</i> coomb at a medium) and drilling five acres a day	—	—	0 3 4½
Six hoe-ploughings, with three horses	—	0	4 0
Hand-hoeing (at four shillings <i>per</i> acre, reckoned for turneps in the account) and weeding	—	0	1 8
Harvesting, three shillings and nine-pence; threshing four coomb and a half, four shillings and ten-pence		0	8 7
			<hr/> 1 0 8
Carrying			

			<i>l.</i>	<i>s.</i>	<i>d.</i>
		Brought over	1	0	8
Carrying out four coomb and a half, and at market	—	—	0	4	1 $\frac{1}{2}$
Rent-charges	—	—	0	15	0
Total expence <i>per</i> acre	—	—	1	19	9 $\frac{1}{2}$
The three crops of wheat were sold, at a medium, for fourteen shillings and five-pence and four sevenths <i>per</i> coomb, which, for eighteen bushels, comes to	—	—	3	5	0 $\frac{1}{2}$
Profit <i>per</i> acre	—	—	1	5	3

The twenty acres in nine years produced seven crops, valued at five hundred and three pounds; but in the ninth year, the crop of sixty coomb is cast by mistake at eighty-seven pounds, which should be but half that sum; deducting therefore forty-three pounds ten shillings, the produce amounts to — 459 10 6

The expence of these twenty acres in nine years, as charged	—	361	10	3
To which is to be added, for four hundred loads of dung	—	20	0	0
				381 10 3
Remains the profit in nine years	—	77	19	9
Which is, <i>per</i> acre <i>per annum</i> , near	—	0	8	8

There were eight hundred loads of dung laid upon these twenty acres; but it is hardly to be supposed, that half that quantity could be made from the seven crops; so that, at least, four hundred loads must be had elsewhere; and the dung is at a high price in that neighbourhood. I have charged but a shilling a load for it.

But if it should be supposed, that more than four hundred loads could be made from these seven crops, it must also be admitted, that a quantity in proportion would be made from the nine crops of wheat, which not being necessary in the hoeing culture, is worth, to be sold, more *per* load than I have reckoned above; and the value of it should then be added to the profit of the hoed crops.

Let

Let us next compare the whole profit of these twenty acres in nine years, in both these methods of husbandry.

	<i>l.</i>	<i>s.</i>	<i>d.</i>
The profit, in nine years, of the hoed crops, amounts to	—	—	227 5 0
The profit in that time by the common husbandry	—	—	77 19 9
Balance in favour of the new husbandry	149	5	3

Hence appears the great superiority of the hoeing culture; and even allowing the clover had produced four bushels of seed *per* acre, the new husbandry is still by far the most profitable.

In answer, gentlemen, to your note upon my last letter, relating to the drill and hoe plough, made use of by the gentleman in Berkshire, they are the same described by Mr. Tull: the drill sows only two rows for horse-hoeing. It will also sow upon the level very exactly, which cannot be said of other drills: but when a whole field is to be sown in equally-distant rows, (which may be called *close drilling*) it is tedious doing it with this drill; and for this reason I have made several others upon the same principle, which perform perfectly well; some that will sow five rows at once at a foot distance, and plant an acre in about two hours, if the land is in good order: but these drills being expensive, and the nicety in constructing and managing them, are objections to their general use.

There is, besides, one defect in these and all other drills that I have seen; they sow the rows at some certain distance, according as they are made at first, but cannot be altered to any other distance without taking them to pieces. I have, indeed, made some that would sow at several distances, but not without a good deal of trouble; and yet it is necessary, in close drilling, to alter the distance of the rows sometimes, according to the condition of the land, and other circumstances.

As I could not bring these drills to do this, I contrived another upon a different plan, to sow corn and smaller seeds,

seeds, the rows at any distance required, from six to thirty-six inches, and which I mean to publish when I have full experience of its performance, it being intended as a general instrument to sow various sorts of seeds upon narrow ridges for horse-hoeing, upon the level for hand-hoeing, or closer when the crop is not designed to be hoed. It has the advantage of being cheaper than the other, and may be made or repaired by common workmen*.

Though horse-hoeing is the most profitable way of cultivating wheat, it is also very advantageous to drill wheat, and other corn, in equally-distant rows. More than half the common quantity of seed is saved, and the crops, though not hoed, are better than the sown crops; but when hoed, a greater crop may be raised than either by horse-hoeing or sowing broad-cast, and the land also improved. This, however, is only for one crop: but as the farmers like this way better than horse-hoeing, and as most sorts of corn, turneps, rape, &c. may be sown in this manner, it will be a general advantage if an easy, plain drill can be contrived for them, the want of such an instrument being the principal obstruction to the progress of the hoeing culture. If the drill constructed by your correspondent in Ireland can be readily altered, to sow the rows at the required distance, it seems, by his description, that it will answer in every other respect, and will be a very valuable instrument.

It was not my intention to describe particularly the manner of performing the several hoeings, &c. therefore I have said nothing of some instruments contrived to save labour, or do the work quicker, and at a less expence. Those who would practise this husbandry,

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N

will

* If our ingenious correspondent will favour us with models or drawings of any instruments used in the new-husbandry, we will take care to get them well engraved, and communicate them to the public through the channel of this work. It would be very easy for us to publish descriptions of foreign drills; but as they are most of them imperfect, complex, and expensive, we rather chuse to recommend to our readers such as have been found to answer in practice in our own country. E. O.

will do right to begin with a small field or piece of land, which may be thus cultivated with the common instruments. And if they have not a drill-plough, two channels may be made on the top of each ridge, by a small instrument, with a couple of tines in it, ten inches apart, drawn by a man or boy, and a man to follow and guide it by two handles. The seed may be dropped into these channels by hand, and then covered with two light bush-harrows, drawn in the manner described above.

There is a sort of wheat raised in Suffolk, called pollard, duck-bill, or fuller's wheat, which is said to be preferable to the other sorts for hoeing. I have tried, but have not yet succeeded, to get some of it in ear. I suppose it to be a kind of cone or bearded wheat, and therefore not in great demand at London, except for exportation. The difference in price may be, perhaps, made up, or overbalanced, by its producing a greater crop, which your correspondent can probably determine; and I hope he will particularly describe it, and how it yields, when he has an opportunity of writing to you again; and if it sells there at a lower price, and how much lower *per coomb*, than common Lammas wheat.

I am, GENTLEMEN,

Middlesex,

Your very humble servant,

Jan. 14, 1764.

E. S.

N U M B E R XX.

On stabbing hoveed Cattle; with a Hint about stabbing hoveed Lambs.

GENTLEMEN,

AS you are desirous of hearing from me as soon as possible, I now embrace a leisure hour for that purpose.

In my former letter (see Vol. III. p. 372.) I informed you I was obliged to perform the operation of stabbing in three several parts of the belly before the ox was relieved; which

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does

does not well agree with what Mr. Comber advances in your Third Volume, page 348, namely, that a small orifice is sufficient to give vent to the confined air, without the help of a tube; and, to confirm the same, alledges, that the puncture of a pin will sink a full-blown bladder: but surely this gentleman should have considered the difference of a bladder, composed of two or three thin membranes, which all together do not make up the thickness of a wafer, and the many coverings of an ox's belly, before, perhaps, you can come to the seat of his distemper: there is the hide; the muscular, or fleshy covering of the belly; a membrane called the *peritoneum*; the cawl, or kell, as the butchers term it, which is very much lined with fat; and the paunch, or gut, as it may so happen; which, joined, are thicker, or otherwise, as the beast is in flesh, but never less thick than an inch; which thickness, I am well persuaded, is the cause that the outward and inward orifices are seldom in a right line together, but when the instrument is in the wound, and consequently is the reason so little of the wind issues out but just upon the extraction of the pen-knife; for presently after, it is very certain the orifices recede from one another, and the outward one is no more in a right line with the inward.

Reflecting upon this, I bethought me of an instrument which makes this operation safe, easy, and productive of immediate relief: it is no other than that which surgeons make use of when they tap dropical persons; they call it a trocar.

Not long since, a two-year-old steer of mine was very much hewed. I borrowed a trocar of a neighbouring surgeon, and performed the operation entirely to my mind. I left the pipe in near half an hour, till the whole belly totally subsided; then washed the wound, which was hardly perceivable, with some spirits of wine and camphire, gave him a glyster, kept him a day or two in a stable, and the beast did very well.

This instrument, at the same time it penetrates the belly, introduces a *canula*, or pipe, into the wound; but a view of it, which may be obtained in any instrument-

maker's shop in London, and bought at no great expence, will, without my saying any more about it, immediately lead you into the more advantageous use of it than any further description of mine can do.

I have myself bought a couple of them, of different sizes, for my own use; and I cannot help thinking but a suitable one will have the same success with lambs, when they happen to be hoven from eating too plentifully of green clover. I assure you, if any should ever happen so with me, I shall, without hesitation, put it in practice.

I shall conclude on this subject with one more caution: the muscles on each side the body of a bullock meet, and end tendinous, under the belly, in a right line with the pizzle; and as we should avoid every little danger, or suspicion of it, I would advise the operator to penetrate the belly five or six inches on either side this line; by which we shun wounding the over-tendinous parts, and consequently make the operation quite void of danger.

Indulge me, gentlemen, a little longer on a different topic. I find you have been attacked by the authors of the Reviews, and indeed in a manner that does not redound much to their credit, though you have answered them in a judicial, but rather genteeler manner than they really deserved.

It is a melancholy truth, that those gentlemen are not always friends to merit and useful knowledge; but whether it be owing to the want of proper abilities to judge, or to that of candour and integrity, or to too large a stock of envy, prejudice, or private interest, (as every useful undertaking will, with the wise and sensible part of mankind, take off from the value and credit of those that are not so) I will not take upon me to say; but certain it is, the fact is so.

I do, by what I say, put a leading question into those gentlemen's hands against me, *viz.* "How can this be true, when we continue publishing with a well-known success?" To which I answer, It is a well-known truth, that the generality of mankind are too much addicted to envy and ill-nature; and as long as they are so, the Monthly
Reviews

Reviews will never want purchasers; for those gentry flock to the booksellers to buy up those Reviews, as ill-natured critics do to the play-houses, to have the innate satisfaction of seeing some deserving new play, or entertainment, ungenerously damned. It requires but a small share of knowledge to commend, and less to condemn; but to do either with justice, propriety, and judgment, calls for superior abilities.

You say you do not arrogate any praise to yourselves, as the authors of the Reviews may do, who can publish a monthly pamphlet without any other assistance but their own. Surely, gentlemen, you mistake this affair. What, pray, could they do but for the many publications, both at home and abroad, which every day brings forth? Are they not the very food and foundation of their undertaking? Let the one discontinue, (but that, perhaps, you will say is impossible) and the other naturally falls to the ground. I wish the authors of the Reviews all imaginable success, so long as they act with justice and impartiality; but when they deviate from either, it is the duty of every lover of useful knowledge, and friend to his country, to look upon them with an eye of contempt.

I am, GENTLEMEN,

Isle of Ely,

Your usual well-wisher, &c.

Jan. 19, 1765.

G. B.

NUMBER XXI.

Two capital Errors in Husbandry pointed out, with their Remedies.

GENTLEMEN,

I Beg leave to point out two capital errors in the general plan of agriculture in England; errors in the first concoction, and of extensive bad influence.

I. The first is, letting our grass-grounds lie unploughed till they become *mossy* and *hide-bound*.

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It were no exaggeration to affirm, that *half* the grass-land in England, that lies at any considerable distance from market-towns, is at this day in this slovenly condition.

Lime, marle, ashes, or dung, will, it is true, bring such land into somewhat better order; but the most effectual and infallible is to *pare* and *burn* the old swarth, and *sow* it with oats on one thin ploughing, (or with rape, if you cannot get the fods burned time enough for oats). Sow it the second year again with oats on a deeper ploughing; the third year, with beans; the fourth year, with wheat.

As soon as the wheat is got, plough it as deep as you can: plough it again in February, and harrow it to as fine a tilth as possible. In March set on one *half* of its own muck, which it has yielded from the straw of its four preceding crops. The shorter the muck, the better. Spread it, and plough it in with a thin ploughing, and take care to have it sown with barley before Old Lady-day.

When the barley begins to spread, (or brewer) sow hay-seeds *undrift*; or, if the land is inclined to clay or black earth, sow timothy-grass, which is a native of England, and grows wild in every county. We used to call it cat-tail-grass, by which name you will probably know it.

I give the gentlemen of America, and Mr. Timothy Hanson in particular, many thanks for teaching us the value of this grass. It will thrive in any ground that doth not want two out of the four elements, *viz.* earth and water. Give it only possession, and, like any lawyer, it is sure to keep it. It takes fresh root at its joints, like quick-grass. It forms a swarth in a few months, and yields the most plentiful and sweetest crop, whether in hay or pasture, of any grass whatsoever: neither lucerne nor burnet are comparable to it. It is, indeed, a most valuable acquisition.

Well, now we have got our ground laid down to grass; and so let it lie for ten or twelve years; but if, through
the

the natural poverty of the soil, or some mischance in the hay-seeds, it should not swarth well, give it a good dressing of rotten dung, of which you need never fail having plenty in the course of management here recommended.

II. The other *capital error*, we are generally guilty of in all the southern counties of England, is keeping our arable so long in ploughing, that it will not produce good crops without an immoderate expence in tillage and manure.

Let such land therefore be made a clean fallow, well manured, and laid down to grass on a barley crop, as above recommended.

But here several objections occur, which I will set down, and answer in the order my thoughts suggest.

First Objection. How *can* we lay down our old arable lands that lie in *common corn-fields*?

Answer. No way, but by *enclosing* them, which if you have no right to do without the consent of your neighbours, you must solicit their consent, and represent to them how much it is your *common interest* to enclose.

Second Objection. We are bound by our leases not to plough up old grass-land.

Answer. My honest lads, I can give you no answer to this till I have talked with your landlords.

Gentlemen, who are possessed of landed estates, I beg leave to ask you, what good purpose can it possibly answer to refuse your tenants the liberty of ploughing up old hide-bound swarth? You are afraid, I suppose, (for I have often heard it alledged) that if you were to give them leave to plough up grass, they would work the very heart of the land out by the time their leases expire.

I own this is not improbable, if they are under no limitations; for tenants have always an eye to their own interest, and it is well for landlords that they have. But if, on granting a new indulgence, you bind them by a new covenant to have only so many acres in ploughing and so many in grass, they cannot impoverish your land without injuring themselves: on the contrary, by this course
of

of management you will find every part of your farms much improved, and capable, at the expiration of the leases, of being let at an advanced rent.

It is demonstrably clear, gentlemen, that the way to make the most of any estate is, not to keep such a part in antient meadow or pasture, the other part in arable land; but to change hands, and let every part take its proper turn in being converted from *mossy* or *rushy pasture* into good crops of *corn*, and from poor lean *arable* into good *fresh grass*. Thus your tenants would become substantial men; and your estates would likewise be greatly improved.

Third Objection. But burn-baiting consumes so much of the soil, that it does an irreparable damage where the soil is shallow. [See this objection answered in a very masterly manner, in our Second Volume, page 352, *et sequent.*]

Answer. It is hard to say what such land is fit for, if the soil is so shallow that burn-baiting shall consume any *considerable* depth of it in proportion to what is left. However, supposing it so, it will by burn-baiting produce in corn more money in *two* years than it did in pasturage for *ten* years before; and when laid down to grass, the pasturage will be much sweeter, and maintain a much greater stock, than the old swarth did: and in a few years the soil itself will grow to the same depth it was before; I say grow, for with the continual accretion of rains, dews, salts, &c. deposited from the atmosphere, *soil grows*, and much the sooner, if its texture has been lately loosened by the plough and harrow*.

I am persuaded, that if the methods here recommended were universally adopted, the produce of lands in England would be double to what it is at present.

I am, GENTLEMEN,

January 20,
1765.

Your constant reader,

R. W.

* This gentleman's future correspondence will be acknowledged as a particular favour by the editors. E. O. R.

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NUMBER XXII.

A Letter from the Old Essex Farmer on the Subsidence of Chalk; containing also some Hints respecting the Improvement of Land, and the best Method of cutting Water-Furrows in a true Direction.

GENTLEMEN,

ONCE more do I mean to address you before I take my leave of mortal concerns. We should, if possible, finish the career of life by doing all the good in our power.

I boast not, for my part, of much knowledge: the wisest amongst us are but fools; yet, if I may be said to know any thing, it must be what relates to cultivating the earth.

Many years experience, constant observation and attention, much reading, added to assiduity and industry, have enabled me to manage the land I have long had in my possession, better than, perhaps, some others would have done.

I have, in the course of forty years, made, as I thought, many discoveries in agriculture; but, though I knew it not, they had most of them occurred to others before me. I never esteemed this a disappointment, being well pleased always to find that any of the practices of husbandry were properly improved.

I took occasion, some time since, to recommend to the notice of your readers a few hints of mine, respecting an easy method of recovering subsidised chalk (See Vol. III. page 202). This method has long stood the test of experience, and may by any farmer be safely practised.

Was I a younger man, I should by name recommend what I advance; but, as it is, I do not chuse doing it. I am full of age and infirmities, and have not lived so long in the world without knowing that people are very apt to

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controvert

controvert new doctrines and opinions: the objections that might be made to my doctrine of subsidence, I have neither health, youth, leisure, nor inclination to answer. Old men do not love trouble; neither do any of them love to be contradicted when they know they speak truth.

I have, in my letter above referred to, page 203, said, that "the predominant natural soil will always precipitate that which is only adventitious, and in smaller quantity;" and this is doubtless true. Chalk laid on clay will, we know, subside; clay laid on chalk will also be precipitated; and the same may be said of clay on sand, or sand on clay: the natural soil, in both cases, will, in time, revert to its original state. As to the vulgar opinion, that the soil is peyorated by these manures, it is to the last degree absurd, and could arise only from the first state of the land not being remembered. See what I have said on this subject, page 200. of the above Volume.

What I have written on the subsidence of chalk, and the simple method of recovering that almost-lost manure, may, perhaps, by some be discredited, by others overlooked; and this, indeed, it was occasioned my giving myself the trouble of writing another letter.

I am, however, now very happy to find I am not singular in my opinion, but that others, as well as myself, know the nature of this subsidence, and have used the same method I recommend of recovering their lost manure.

I have already, I think, hinted to you, that I am fond of reading, particularly such publications as have any reference whatever to the affairs of husbandry: accordingly I saw advertised, in the public prints, a new pamphlet, entitled *Foreign Essays on Agriculture and Arts*, in which I was taught to believe I should find the husbandry-practices of foreigners.

I ordered my bookseller to get me the pamphlet, which I eagerly perused, and, believe me, I was well satisfied with my purchase; finding in it several curious and interesting articles; but when I came to the ninth and tenth articles,

I was

I was perfectly charmed to find that the writers of them fell entirely in my opinions, odd, unaccountable, and out of the way as they may appear to many.

M. le Chambrier de Travanet, the author of the first-mentioned article, says, page 68, "If marle, even in
" the quality of a simple matrix, is well adapted to at-
" tract the nitre in the air, its effect on vegetation will
" be lasting, as it may be reiteratedly impregnated. This
" is made evident by the earth from which the salt-petre-
" makers have extracted the salt-petre. Being exposed
" for a certain number of years to the air, and to the
" north-easterly and north winds, and being sheltered by
" walls from the south, it imbibes salt-petre anew, which
" is again, by the former operations, extracted."

All this perfectly coincides with what I have said respecting chalk: I esteem it "a simple matrix," nearly at least, if not entirely so: I assert that "it is well adapted
" to attract the nitre in the air," and that "its effect
" on vegetation will be lasting, as it may be reiteratedly
" impregnated," by being brought again to the surface as soon as it is subsided: and this must, I think, be what M. de Chambrier means; so that we find here, that marle may be recovered by ploughing, as well as chalk.

But more to the point is M. Jeanneret in the succeeding article.

This gentleman, page 73, has written the following very striking passage.

"It has been said, that marle is prejudicial when laid
" on in too large quantities; that it ruins the son after
" having enriched the father. Nothing can be more
" contrary to reason and truth than this; for," says this
" experienced cultivator, "I can affirm, that thirty-three
" years ago, whilst my father was living, I caused some
" land, of the nature of that at Châtillon, (light and
" dry) to be marled. After some years the marle, being
" subsided, yielded no good effects. About ten years
" ago we ploughed up this field, and of course brought
" to the surface the marle, which was before in a manner
" lost. It again attracted the nitre in the air, and was

“ the means of producing as good crops as at first.
 “ This,” continues our sensible writer, “ may be de-
 “ pended on as a certain fact.”

Is not this, gentlemen, falling in entirely with the doctrine I have advanced in my letter above referred to? and does it not afford abundant proof of the truth of all I have said on the subject?

Some may, perhaps, attempt to object that the circumstances were different; M. Jeanneret using marle on a light dry soil, and I, chalk on a stiff clay: there is, however, a sufficient analogy between the two manures, they being both of them absorbents, and acting, not by any innate qualities of their own, but by imbibing particles which are either absolutely necessary, or at least useful, to vegetation.

I have more than once said, that the natural soil precipitates that which is only adventitious: this is a certain and well-known fact; but I do not remember to have assigned any reason for it, which I shall now attempt to do.

Clay laid on chalk will subside, as will also chalk laid on clay; yet, according to the laws of gravitation, that which is on any account most ponderous should be most inclined to subside, and it is certain they cannot both be so; it therefore remains to assign some cause for this constant effect.

I imagine then the proportion of gravity between one and the other to be entirely out of the question in this subsidence: it is therefore unnecessary to examine which is the heaviest, whether clay or chalk, though the last is well known to be lightest, on account of its being more porous.

But to proceed: when chalk is laid on clay, the manure cannot, though laid on in very considerable quantities, be supposed to bear any proportion with the natural loose soil; therefore, when the whole comes to be pulverised and broke, the small particles of the chalk will stick on, as it were, and cover the surface of the larger particles of the clay.

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This being the case, there must be, of course, betwixt the particles of clay, interstices large enough to suffer the chalk to be washed through them by the frequent rains which fall at various seasons of the year: this constitutes the subsidence I have mentioned, which is certainly forwarded by frequent ploughings, as these, by exposing alternately to the rains every part of the surface of the clayey particle, contribute to its being more speedily divested of its chalky tegument.

But lest this chain of reasoning should not appear quite clear to some of your readers, I shall take the liberty of illustrating it by a plain and obvious fact.

Take twelve pounds of the smallest shot you can procure; put them into any vessel you chuse: then take two ounces of powdered cork, which every one will acknowledge to be specifically lighter than lead.

When this is done, let the shot be wetted with water, which should have a free passage to run out of the vessel. Then take the powdered cork, and sprinkle it over the shot, which must all the while be kept stirring.

When all the cork is sprinkled on, and the shot well stirred, it will be found that the surfaces of the latter are covered with the powder of the former.

Afterwards let water be sprinkled over the shot, and keep them still stirring, though not quite to the bottom; and you will find that the cork, though lightest, will speedily be carried by the water through the interstices of the shot, and will form a bed at the bottom of the vessel.

This is, in some measure, the manner in which chalk subsides; and, if so, why should it not be again recovered in the manner I have laid down?

I could farther illustrate this matter by instancing a mixture of light dust with sand; but I do not think it any ways necessary.

M. Jeanneret, coinciding so much in opinion with me, convinces me fully of the necessity there is of a channel of communication for every thing that relates to husbandry. Your *Museum Rusticum* gives the farmer an insight into the

the various methods practised in the several parts of the British empire; and give me leave to tell you, that the other publication on Agriculture and Arts, which I have quoted above, is not badly calculated to inform us farmers what is going forward respecting such matters in other parts of the world.

Some of your readers may possibly imagine it is high time for me to have done, and conclude my letter; but such know not the value of health, and of time: I am ever happy to make use of what intervals of ease I have, in contributing to the lasting benefit of my country; and what can benefit it more than improvements in agriculture; which is the life, the *primum mobile*, of a commercial state?

But now I have mentioned improvement, let me say a word or two on the subject to my brother farmers.

When a farmer is inclined to improve the land he occupies, he should, in the first place, declare such his intention to his landlord, and persuade him to grant him a new lease, that he may enjoy the full benefit and advantage arising from his industry and knowledge.

Before he begins, let him sound the depth of his pocket, and take a special care that he does not make larger disbursements than he can afford without lessening his stock, or hurting his family.

It is always best to begin slowly; to improve one field, or less, at a time, as, in case of a failure of success, the loss will not then be so great; and if every thing answers to the farmer's sanguine wishes, he will be the more encouraged and enabled to proceed, as the profits of his first experiments will be coming in before he makes his last disbursements.

This method of proceeding is particularly to be attended to when a farm is to be chalked, as the expence of laying on this manure is so considerable, that few farmers are rich enough to improve a farm but by parcels; and, indeed, this is, after all, the best way by much, as small errors may then easily be corrected before it is too late.

I have

I have known some farmers in chalking land first bring it into their yards, and lay it in a large heap, or in the side of a field, and afterwards cart it on to the land with their tumbrels when they are more at leisure; but this is a bad way; it encreases the expences, and, besides that, the chalk hardens by lying, and is not so well disposed to dissolve by the operations of the air, frosts, and rains. This is a matter of more importance than is in general imagined; I would therefore, by all means, recommend to the farmer to lay on his chalk out of hand as he fetches it home, and as soon as may be after it comes out of the pit, for the reasons mentioned in my former letter above referred to.

I very seldom lay any dung on the land I chalk, for three years after it is chalked, and this for the following reason.

All dung promotes fermentation in land: when land ferments, it swells; the particles of the soil, which were before coherent, become more detached; and the lumps of chalk, which at first are large and heavy, sink more readily beneath the plough-share, and are in a manner lost: besides, the chalk is apt to imbibe the juices of the dung, which, in my opinion, prevent it from being so speedily acted upon by the weather.

Some may, perhaps, imagine this is rather refining too much in matters of husbandry; but refinements of this nature are necessary, if a man would wish to make all possible advantage of his land: should he despise them, he must be content to jog on in the old beaten track.

A great deal of our wheat-land in this county is of a compact nature, and very retentive of water: for this reason the farmers generally, on such soils, sow their wheat on high ridges, in order the better to secure it from damage in a wet winter.

In such seasons you will often see the water stand a considerable depth in the furrows betwixt the ridges, reaching, perhaps, half way up the latter. This cannot but greatly damage the crop, though, on account of the height

height of the ridges, it does not absolutely chill the roots of the corn and kill it.

This, I say, is the natural state of much wheat-land; and all for want of having the water-furrows properly disposed.

This disposing of the water-furrows is by many esteemed a matter of no great importance; the care of doing it is often entrusted to common servants, and they generally do it in that manner which is most consistent with their ease. The natural consequence of this neglect must necessarily be, that such water-furrows are of very little service to the crop.

If the farmer would wish to have his water-furrows really serviceable, he must use many precautions; and his first care should be, to find out the natural slope of the land; for there is scarcely any field, which seems ever so much upon the flat, but what may, by an attentive observer, be found to have a slope.

The time to discover this natural slope is during a heavy shower of rain after the land is already wet. The farmer is at such a time to remark which way the water runs; and he may, by that means, easily discover in what direction he shall make his water-furrows, so as effectually to answer their original intention, which was undoubtedly to serve as channels to carry off the superfluous water, that would otherwise, by stagnating on the land, do great injury to the crop, and, on some occasions, totally destroy it.

As soon as ever the water-furrows are so disposed as to convey all the superfluous moisture to the lowest part of the field, the farmer's next consideration should be to dispose of it to the best advantage.

If there is a pond near the field, which is often the case, he will naturally lay his drains into it; if not, he must be content to dig a deep ditch to receive the water; which ditch should serve as a channel to convey it to the next pond, rivulet, brook, or river.

I might have added above, that when water-furrows are cut in a wrong direction, they not only are of no service whatever,

whatever, but often do great damage, and the crop is more hurt by the wet than if there were no such furrows cut. If there were no water-furrows, the water would naturally be inclined to run towards the lowest part of the field; whereas the aukward furrows, which we now frequently see, serve as channels to convey the water out of its natural course, and when it comes towards the higher ground, it must, of necessity, stagnate*.

I could say a great deal more on this important subject, but that my feeble fingers are tired with writing this already (perhaps) too-long letter; besides, the church-bell, which is now tolling for some lately-departed fellow-christian, reminds me that I have other concerns than what are merely human.

It may next, perhaps, be my turn to take leave of this mortal state: if so, I am perfectly resigned to the will of that Divine Being to whom I owe my life, my all; that Being whose wonderful works I have, for forty years past, every day with pleasure contemplated; and at this moment I feel in my heart a glow of happiness, in that it was the pleasure of Providence to place me in such a station of life as has afforded me continual opportunities of watching and admiring the progress of nature, guided by the hand of God.

I am, GENTLEMEN,

Yours, as before,

Hundreds of Essex,

A FARMER.

Feb. 8, 1765.

* We must not, in this place, omit thanking our Essex farmer for his very valuable favours, and shall be glad to hear from him as often as his health may permit. We join with this correspondent in thinking, that farmers in general would find it turn out greatly to their advantage, did they bestow more care and attention in cutting their water-furrows, as when properly disposed, they are, past all doubt, the best preservative against the damages which are, for the most part, the consequences of a wet winter. N. O. A. H.

NUMBER XXIII.

A Letter from George Austin, Esq; to the Editors, on the great Advantages which would result from encouraging the Culture of Hemp and Flax in North-America, and a probable Scheme proposed for doing it to effect.

GENTLEMEN,

AS an admirer of your *Museum Rusticum*, and one who endeavours to recommend to our neighbouring farmers those excellent methods you prescribe for the improvement of agriculture, I think myself tolerated to give you the trouble of one letter on a branch of commerce, which merits, in my opinion, the most serious attention.

I am sensible of my utter inability to handle the matter in so forcible a way as it deserves; but I flatter myself, if my letter meets with your approbation, it may contribute to the public advantage, (the main point you seem to pursue) as much as any one thing that could be undertaken at the present æra.

Before I enter upon the subject, I must premise, that I am a *quondam* merchant, a North-American planter, and entering upon the business of an English farmer upon my own lands, which I purpose to manage, as nearly as I can, according to the directions laid down in your work.

If any thing, unnoticed before, shall result from my observations, that is worthy to be laid before you, I may, perhaps, by and by, give you the trouble of a second letter*.

My intention in this is to point out the most probable means that have occurred to me, how we may, within the
British

* Mr. Austin does us great honour, and we take this opportunity of assuring him, that his correspondence will always be esteemed a particular favour. If it is not too much trouble, we should be glad if he would send us an account of the culture of rice. E. N. O.

British territories, most speedily and effectually introduce the culture of hemp and flax, for the purposes of cordage and sail-cloth, for which two articles only the consumption in our own navigation is immense, and may be still further extended, when we have it to spare, by transporting it to Spain and Portugal, both which kingdoms may be more readily supplied by us than from the dominions of the Czarina.

I was formerly well acquainted with the east-country trade, when it was admitted by all, that no hemp (save that of Ancona, which came very dear) had a sufficient strength of harle for making stout cordage, but the hemp of Riga and Petersburg: and the flax of Narva was so much preferred to all others, for our English sail-cloth, that the maker, upon every contract with the government, was, upon oath, obliged to deliver such cloth as was made entirely of Narva twelve-headed flax.

From such enquiry as I have been lately able to make, I believe the sentiments of the commercial world are much the same now. How obvious must it then be to every one, in the least experienced in trade, the necessity there is that every possible method should be tried to raise those commodities, so essential to our commerce, within ourselves, which we at present purchase from a foreign state, subjected to the uncertainty of obtaining it at any rate when it shall be most materially wanted in time of war! Indeed, when we get it upon the best terms from this quarter, it is a heavy trade, more than three fourths of the purchase paid for in specie, besides a commission to the Hollanders upon the payment of the bills, as they are generally drawn payable in Amsterdam.

I have not a hope that it can be done in Britain, for the reasons before assigned; the harle or rine of our hemp and flax not being of sufficient substance, and the lands in this kingdom so high rented, and requiring a constant expensive manure, more than the commodity can support; but in that extensive country of North-America, it is hardly to be doubted but that lands may be found as well

adapted to the culture, both in the nature of the soil and climate, as any within the dominions of Russia.

The lands there bear but a small proportion in price to those in England, but, in richness and durableness, abundantly surpass them.

I now plant lands that have been in perpetual tillage for more than thirty years without manure, the crops apparently as good as ever, and I verily believe will not fail for a century to come: this is as rich a marle as any in the universe, of ten or fifteen feet deep, and I have reason to believe there are many thousand acres of such land upon the isthmus between Fort Beaufejour and Bay Vert; the Acadians, who have seen my lands, assure me so.

I am possessed of the act of parliament which was passed last sessions, giving a bounty on hemp and flax of the growth of the American colonies, but have very little expectation of its being of any avail, from a former trial here, and another of like sort in the province of South-Carolina, where a law existed for some years, giving a bounty on merchantable hemp and flax, that should be raised there, of no less than twenty shillings sterling *per* hundred weight.

Many, indeed, made little attempts; but they were chiefly such as could not bear the disappointment of repeated losses on crops; and when I observed, that the quantities produced every year became less, I determined to have a trial under the management of an overseer, who either knew, or pretended to know, the process of it in England.

The result of my experiment was, the sinking of some hundreds of pounds, besides the labour of twenty of my people for three or four years.

I saw clearly that an English farmer, who had some knowledge of the management of hemp in this climate, was as much to learn there as a perfect stranger.

I must acknowledge, I have seen very good hemp, the growth of that country, not inferior to the best Riga ryne; but this coming from the north-west part of the country,
distant

distant two or three hundred miles, where the climate is extremely different from that near Charles-Town, where I made the essay, my pursuing the same methods with those back people, as nearly as I could, is, in some degree, the cause (I assign) for my failure in my crops, and which directs us in our future researches to look out for proper lands in a more northern latitude.

Here again I fear the process will be slow, from the remarks made above, unless some people could be introduced, who are experienced in the culture of hemp and flax in climates of equal degrees of cold and heat.

Though to attain such proper hands may be attended with some difficulty and expence, I must believe it is practicable, and would humbly propose that half a dozen Russians should be first sought for from those countries where the best of their hemp and flax is produced: two of each of them should be sent into the river St. Laurence, two more to the bay of Fundy, the other two to the rich waste lands on the back of New-York; at each of which places the lands are extremely fertile, and the climate cannot be much unlike that of Russia.

Let those people be allowed to make their experiments on such lands as they shall best approve of, and their reward, when they succeed, be a pretty little freehold to themselves, with some gratuity from all such of their neighbours as shall desire to be instructed by them.

I cannot doubt but our government will cheerfully bestow upon them a few acres of land, and am inclined to believe, that the people might be prevailed upon to quit their own country for a land of liberty, without demanding high terms, having frequently found Russian seamen in the British service, well pleased that they had got into our employ.

What a noble accession of wealth to the state would it be, to put his majesty's new subjects of Canada upon the culture of hemp and flax! There would be nothing more required to effect this, than to shew them the thing is practicable, and a readier way to wealth than the old track of husbandry they are in; to which must be added, their
being

being supplied with seed, when they first set out, upon the easiest terms possible.

An expence must attend an undertaking of this sort, to obtain and bring over these people from Russia, to transport them to the places destined for the experiment, and to support them with provisions, implements of husbandry, and seed for a year or two; but, in my opinion, the sum required would be so inconsiderable, that I would cheerfully become one of a private company of half a dozen to prosecute the business to effect, but that I am defective in the most essential requisite to promote and forward such a business, a want of that health and activity which I should chuse to exercise in any undertaking I engaged in.

If you, gentlemen, view this matter in that important light I do, and adopt the mode, I cannot doubt but that through your influence with the legislature, both money and lands will be readily granted to make a thorough essay.

An acquisition of territory can be of no advantage to a state, further than as it provides a residence and employment for a number of people that become, by their emigration, useful to the public, as well as to themselves; which is only to be effected by chalking out a plan how they may enrich themselves, and at the same time serve their mother-country.

Let ten thousand of our peasants be sent to North-America, and permitted to go on in their own way, they will not deviate from the old track of farming, though at the same time, perhaps, they may be much puzzled to know what to do with the grain when raised: they will, indeed, have plenty of bread, and other provisions; but wanting many necessaries, without money to purchase, they will be compelled to establish manufactories amongst themselves, of iron, linen, woollen, &c. which they can not do without.

This must be allowed a disadvantage rather than a benefit to a state, if the people here spoke of should be transplanted from their mother-country, which cannot, consistent with sound policy, part with her people, unless

less upon a good prospect of their becoming, by their removal, more useful members of the community; and this they would undoubtedly do, if once put in the way of raising such raw materials as our manufactories want on this side; and those which I am endeavouring to recommend are, in my opinion, of all others, the most to be sought for.

It may, perhaps, be required of me to prove the above assertion, that there is little or no chance of our people applying themselves to any thing but farming, unless they shall be either led or forced into some other pursuit.

Turn your eyes only to the provinces of Jersey and Pensilvania, which will present to you the plainest proofs imaginable.

The first settlers in the Jerseys copied exactly the business of their next neighbours, the Yorkers; and those of Philadelphia followed both, and still persevere in the same track, though often put to great shifts how to part with the provisions they raise.

They have little else at this day, to purchase the conveniences and superfluities of life, but the produce of their provisions, and some flax-seed, which, being inadequate to the purpose, obliges them to manufacture every thing they possibly can within themselves.

I could say much more upon the advantage and expediency of some such trial as here recommended, but am afraid I have, by this time, totally wearied out your patience.

As I have nothing in view but the public good, for which you appear to me to be zealous champions, I have confidence that my address, though the measures should not be adopted, will not be deemed impertinent. Through a load of infirmities I am rendered incapable of expressing my sentiments with that preciseness which would be satisfactory to myself; of course it cannot be so to others.

One point omitted will be highly essential, that some of the best seeds, both of hemp and flax, that are produced round the Baltic, and in Holland, &c. (of the latter

latter there are various sorts well deserving our cultivation) should be obtained, and sent with the people.

Every kind has its particular uses in our manufactories, and must be bought of foreigners, if not raised amongst ourselves.

This leads me to one further hint before I finish, viz. that I am pretty certain the Ancona hemp may be propagated to advantage in some of our colonies in North-America, from an experiment I have made of it.

I once procured eight or ten bushels of the seed, and gave it amongst such of the planters in Carolina as I thought would attend to it with most care.

It grew luxuriantly to the height of four feet, and yielded seed in vast abundance. It was a flax-seed of double the magnitude of what grows in England.

A patch, which I sowed in my garden, continued green all the winter, and early in the spring following gave a plentiful second crop of seed: immediately after this came to perfection, the stems died.

I really think this worth propagating in a proper climate, were it only for the seed. I should judge that part of North-Carolina near Edenton, or the southern part of Virginia, a climate nearest to that of Ancona, notwithstanding we find eight degrees difference in latitude.

If it was also tried in Pensilvania; it would not be amiss, especially as the people of that province are well experienced in the culture of flax, which this certainly is, though called hemp by the Italians.

I have so plainly delineated myself to all the Carolina folks, that it would be absurd to conceal my name; therefore, to save you the trouble of enquiry, I will subscribe myself, with all respect, and the most hearty wishes for a perpetual success to all your laudable endeavours,

GENTLEMEN,

Your most obedient,

Aston, near Shifnal, Shropshire, Humble servant,

December 31, 1764.

Geo. ASTON.

P. S.

P. S. I fancy a correspondent of yours, who tells us that the hemp of New-England is of little worth, being very brittle, has bought one of the sale ships of that colony, which are often equipped with twice-laid cordage. If it serves for the passage to Europe, the purpose of the seller is answered. I have no doubt but the gentlemen of New-England will tell you, that they grow very good hemp there, but not half enough for their own consumption. They have but a barren, poor soil, very little of it rich enough for hemp*.

G. A.

NUMBER XXIV.

To Y. Z. Esquire.

An Improvement on the Crane-Wheel, so as to render the Working of it safe.

S I R,

SOME years since, being in a coffee-house in London, and reading the Daily Advertiser, I met with the following melancholy relation.

“September 27, 1754. Yesterday a man and boy being in a crane at Hays’s wharf, in order to lower a hoghead of sugar into the hold of a ship, but for which purpose they were not a sufficient weight, the crane returned with them. The boy instantly threw himself out, and received no hurt, but the unfortunate man was thrown about in the crane with great violence, and at last jammed between the crane and the post: he was taken from thence alive, but expired as they were carrying him to St. Thomas’s hospital.”

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And

* We should esteem it a favour if this gentleman would oblige us with an account of the culture of the maize or Indian corn in America; and whatever he may have health or leisure to send us, concerning the commerce or internal trade of that great continent, will be highly acceptable. E. N.

And again, in the London Evening-Post of January 6, 1756, I met with an account of another accident of the like kind, *i. e.* "On Saturday two men, who were working in a crane at one of the wharfs by the river-side in this city, were almost killed; one of them had his scalp torn off, his collar-bone, some of his ribs, and one of his arms broke; the other was greatly bruised in several parts of his body, and one of his legs broke. — What pity it is some method is not hit upon to prevent the many grievous accidents of this kind, and annually save many lives of his majesty's subjects!"

Several times, since I read the above accounts, I have met with others of the same nature. This put me upon thinking of some method to prevent such terrible accidents for the future; and I think this might be effectually obtained, if the men were not to work in the inside, but on the outside of the wheel; by which method these two following great advantages will be gained.

First, The man working on the outside of the wheel, in the manner I shall direct, may, upon an emergency, act with a power equal to more than twice his own weight; and if he finds he cannot overcome the resistance, he may in a moment quit the wheel with the utmost safety.

Secondly, The man that works on the outside of the wheel will constantly act with a power at least twice as great as the same man acts within the wheel; which is easily demonstrated from hence, because the lever he works at in the former case, has more than double the power of the lever in the latter case.

That every thing relating to the manner of working this crane may be the better understood, I have herewith sent a sketch of a section of the crane-wheel, with a description of it, and the method of working it, &c.

S I R,

Harborough,
January 10, 1765.

Your most obedient servant,

S. R.

NUM-

Fig. 7.



A Nameless
Grass found in
Yorkshire.

Fig. 4. a



Yellow-Trefoil.

Fig. 3. An ear of Summer-burley in its natural size.
raised by Sir H. Plat. 1594.

NUMBER XXV.

Explanation of the Representation, in the Plate, of the Section of the new-invented Crane-Wheel.

SEE plate I, where figure 1, marked A, B, D, represents a section of the crane-wheel, the outer verge, sole, or rim of which is set round with steps, six, seven, or eight inches asunder, as shall be judged most convenient. C, represents the axis of the wheel, which the rope C, E, F, (to which the weight to be raised is fixed) winds round. G, represents the pulley of the crane, and H, the weight to be raised. Near one side of the wheel, and a little above the horizontal line that passes through its centre, is a kind of scaffold, or stage, erected, marked I, L, upon which the man stands when he is going to work the wheel. On each side of the man is a rail, K, which two rails the man holds fast by with his two hands. Over his shoulders there should be a pair of leather straps, like those used by the chairmen when they carry a chair; which straps should be slipped upon the ends of the two rails above mentioned: then the man is properly prepared to work the wheel, which is performed by his stepping off the stage upon the steps of the wheel, and treading alternately with his feet upon the steps; by which means the wheel will be turned about with a power equal (at least) to the weight of the man placed at the distance of the semidiameter of the wheel from the centre C, as is represented in the plate: nay, more, the man will be able (by having firm hold of the rails, and by the assistance of the leather straps that are fixed to his shoulders, and to the rails) to raise, or at least resist, at an emergency, more than twice his own weight, and if he finds he is not able to overcome the resistance, he may, in an instant, quit the steps of the wheel, and land himself safe upon the stage I, L.

I would rather advise two flights of steps, for one man to work at, and these steps alternately placed, as is represented

sented in a direct view, figure 2, in which one flight is trod by the man's right foot, the other by his left foot. This, I apprehend, will be most convenient for the man that works, by giving him more room and freedom to tread.

N. B. A crane-wheel already erected, and made to work within the wheel, may, at a very little expence, be fitted up to work on the outside in the manner above described. Crane-wheels, to work on the outside, may be made for one, two, or three men to work at together, as well as those wheels that are worked within.

NUMBER XXVI.

On the great Benefit of Soap-Ashes used as a Manure.

GENTLEMEN,

HUSBANDRY being little more than the experience of past ages and the present one, I think there is no safer way of obtaining knowledge therein, than to practise it one's self; to learn, at the same time, what is done by our neighbours on the continent*; and take a view (as far as books can assist us) of all the steps that have been taken that way by our forefathers. This seems to be the plan which the author of the *Essays on Husbandry* laid down to himself; and as he speaks much in commendation of Sir *Hugh Plat*, I have, with no small pains, made a collection of his works, which I esteem greatly, and here send you his opinion (with one of his experiments) upon *soap-ashes* as a *manure*.—His words are as follows.

“The matter which I mean is, waste *soap-ashes*, which the soap-boilers, for the most part, give for carriage.” (This was written about the year 1610.) “I hold myself bound in conscience, for my country's good, not to hide the same any longer.”

“And here it shall be no shame to us to acknowledge, that the Flemings were our first teachers in the use of them.

* The knowledge of foreign practices cannot but be very useful to English farmers. E.

them. Nay, it is rather a great shame that we cannot be *provoked* to our own profit by the example of others, who have so many years enriched themselves thereby, and of late years, to their great loss, been forced to leave them. As concerning their good opinion, and profitable use of them, I think we need no *further* argument than to maintain, that the price that they gave for them to the soap-boilers was *three and four shillings* * a load, besides the carriage of them into their own country."

"And yet, if the infinite extension of them, and the easy charge of spreading them, together with their especial nature in suppressing weeds, be well weighed and considered, we shall find them to be much cheaper at *that* price than any common *soil* † or stable-dung whatsoever; for how cheap soever our other *soil* may be, yet the transporting thereof from place to place (if the land lies at any distance) makes it so chargeable, that the poorer sort of farmers, in many parts of this realm, will scarcely afford the carriage thereof to their grounds, although they might have the same freely given them: whereas two loads of these ashes, or thereabouts, being sufficient for an acre of arable land, are soon bestowed by the labour of one man, without the help of cart or horse; for their manner about Bruges, after they had sown the field with grain, is, to strow these ashes thereon with their hands ‡ till the ground did seem to have gathered a whitish garment upon it; and that was sufficient for that year: and by this practice they might sow the ground yearly, without leaving it fallow at any time. Yea, their ground, being helped in this manner, would yield them a most rich

* Little as this may seem, it was an enormous price for manure in those days, when the farmer bought a load of dung for three-pence.

† *Soil* was the old word for filth, muck, manure, dung, &c. See Worlidge's Husbandry, in the year 1669, where this word is explained.

‡ Soap-ashes can neither be sown truly nor expeditiously this way; besides, they blister the hands of the sower. It is best to scatter them with a Berkshire *peat-ash spoon*.

rich crop of flax, whose seed, of all other, doth burn and pill * the ground; for so saith the poet,

“ *Urit enim lini campum seges, urit avena.*”

Virg. Georg.

“ It is also with good probability to be conjectured, that these soap-ashes do not only enrich the ground, but also help to destroy *worms, weeds, and rushes* that spring up in moist and barren lands; and then let any man judge what may be saved in *that* chargeable weeding of woad. Quere also, if broom or fern may not be destroyed by these means? I make no doubt of broom, if the ground were first ploughed, and afterwards these ashes were sown upon the same.

“ And because I would not rely wholly upon the outlandish experience of *these ashes*, (lest otherwise it might haply be objected, that they are not agreeable with our soil and climate) I have thought good to add to this treatise the *portraiture* of an ear of summer-barley, being drawn duly and sharply, according to the length and breadth thereof, as it grew at Bishop's-Hall, in Middlesex, *Anno Domini* 1594; the ground being manured with *soap-ashes*, as above expressed:” (see plate I. fig. 3.) “ which ear, together with sundry others of the same proportion, (as by divers eye-witnesses of good credit I can prove and justify) did grow this summer at Bishop's-Hall, where I dwell, to the great admiration of the beholders; the stalk of which, together with the ear, was measured to be an ell, and three inches in length from the ground to the summit thereof: and this I did in a barren ground by the help and means of *soap-ashes*, God blessing my labours therein†.”

JEWEL-HOUSE of Art and Nature. By Sir H. PLAT,
of Lincoln's-Inn, Kt. and published by Dr. BEATI,
4to, 1653.

* To pill; to rob, to defraud, to starve. Hence come *pillage, caterpillar, &c.*

† For an account of Sir Hugh Plat, see p. 49, of this Volume.

NUMBER XXVII.

A Vindication of the Editors in a Point of Importance.

GENTLEMEN,

HAVING perused the last Number of the *Museum Rusticum*, (Number XVI. for December, 1764) it gave me no small concern to see the editors of that useful work under a necessity of clearing themselves from the imputation of being guilty of mean and low artifices to enhance the credit of their entertaining publications; but I make no doubt they have given ample satisfaction to the gentlemen, who were too severe in their censures, by their modest defence of themselves.

My reason for troubling you with this is to acquaint you with the name of the gentleman who signs himself W. T. B. who is a clergyman, Mr. *William Thomas Bowles*, of Aynho, in Northamptonshire, son of Dr. *Bowles*, Vicar of *Brackley*, in the same county*.

This, I thought, the editors had a right to know; and lest the gentleman himself should not think proper to acquaint you with it, I have taken the liberty, though, I confess, without his consent or knowledge†. I subscribe myself a well-wisher to that work; and am,

GENTLEMEN,

Carnarvonshire,
January 26, 1765.

Your most humble servant,

OXONIENSIS.

* We esteem ourselves infinitely obliged to this gentleman for the trouble he has taken in clearing up a matter which, we acknowledge, has given us some chagrin. The desire of benefiting our country is the motive which actuates us in this our undertaking; and we flatter ourselves, that the public in general, and our correspondents in particular, are fully convinced that we make use of no mean arts to catch applause.
E. R. N.

† We hope Mr. Bowles will not be offended at our inserting his name without his knowledge, as we make no doubt but that,
had

NUMBER XXVIII.

Remarks on the different Species of Clover and Trefoil.

GENTLEMEN,

I Sit down to communicate to you some remarks which I have lately made on those useful grasses, the clovers and trefoils.

1. Mr. *Mills* assures us, (in page 343 of his Third Volume of Husbandry) that "the purple, or, as it is called, red meadow trefoil, which is *C. Bauhin's trifolium pratense purpureum*, has already been sufficiently distinguished from the common red clover, or red honey-suckle, Ray's *trifolium purpureum majus pratense simile*." Syn. page 328.

In support of this assertion he refers us to page 202 of the same Volume, where this difference is held forth in a note marked *, but in such a manner, that I own myself unable to comprehend its meaning: his words are, "The stalks of the meadow trefoil are weak and hairy; the stipulæ which embrace the foot-stalks of the leaves are narrow and very hairy; the heads of the flowers are rounder than, and not so hairy as, those of the clover, whose stalks are strong, almost smooth, furrowed, and rise twice the height of the other. The heads of the flowers of the meadow trefoil are larger, more oval, and more hairy than those of the other: their petals open much wider, and their tubes are shorter."

Mr. *Mills* gives, as his authority for this extraordinary note, Mr. *Miller's* Gardener's Dictionary, Art. *Trifolium*. He does not profess whether he gives the sense or the words; and that work is not at hand. Mr. *Mills* has sometimes shewn himself at opposition with Mr. *Miller*; and

had he not over-looked our request, he would himself have enabled us, in this manner, to have vindicated ourselves from causeless aspersions. E. N. R.

and he does him no honour as his representer: for here is a flat contradiction in the passage, viz. The heads of the *meadow trefoil* are represented as *rounder* and *less hairy*, and also as *less round* and *more hairy*, than those of the *clover*.

Till Mr. *Mills* pleases to determine to which side of this description he will adhere, he must excuse his readers if they do not *implicitly* subscribe to his condemnation of other botanists, as confounding the *trefoil* and *clover*.

I have more regard to *truth*, and the advancement of *useful knowledge*, than to lay my finger on this apparent contradiction, if I was able to find out the distinction which Mr. *Mills* supposes to take place. I have plucked *red* or *purple clover* from the lands in which it was sown last year, and *red* or *purple trefoil* from the highways, and other places in which no traces of the plough appeared; nor could I, with any probability, suppose that the seed had ever been sown by any hand but that of *Nature*; and though I perceived some difference, yet it was such as might well be ascribed to the difference of soil and culture*.

I have

* In order to do justice both to Mr. Miller and Mr. Mills, we shall here insert a part of what Mr. Miller has said on the subject of red clover, under the article *Trifolium*, in the last edition of his *Gardener's Dictionary*. "*Trifolium caule erecto, foliis oblongo-ovatis integerrimis, spicis ovatis, calycibus setaceis*. Trefoil with an erect stalk, oblong, oval entire leaves, and oval spikes of flowers. This is the *trifolium purpureum, majus, pruteni simile*. Ray. Syn. 328. The red or Dutch clover.

"This sort, which is well known in England by the name of red clover, needs no description: it has been frequently confounded with the red meadow trefoil by the botanists, who have supposed they were the same species; but I have often sowed the seeds of both in the same bed, which have constantly produced the two species without varying. The stalks of the meadow trefoil are weak and hairy; the *stipulae*, which embrace the foot-stalks of the leaves, are narrow and very hairy; the heads of flowers are rounder, and not so hairy as those of the clover, whose stalks are strong, almost smooth, furrowed, and rise twice the height of the other; the heads of flowers are large, oval, and hairy; the petals of the flowers open much wider, and their

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R

tubes

I have fully experienced, that coal-ashes laid upon any soil, even the coldest clay, will produce the red clover in abundance. This effect, indeed, will be more speedily or more slowly produced, in proportion as the earth is less or more cold and bound. In some soils this effect appears not for several years.

About ten years ago, a tenant complained of a meadow close, which my father had laid to grafs, but without sowing of seeds, however in good heart.

I examined it, and found that it produced but little grafs, and that of the worst sorts. This I ascribed to its *natural coldness* and *excessive moisture*; though it had a good decline for the water to run off.

As we then went to spend the winter in York, I gave him an heap of coal-ashes, made perhaps in two or three years, or more. He led above an hundred and fifty loads on to the worst parts of the close in question, which contained about seven acres.

In the two succeeding years he reaped no benefit from this manure; but seemed to have lost all his pains and expence in loading. However, in the third and fourth, he began to see his advantage by the appearance of red clover, where not a pile of this grafs had before been known.

I, indeed, thought that the extreme coldness of the soil had overcome the warmth of the ashes, and that I must have allowed him to set in the plough, in order to fill the ground with lime, and lay it in higher ridges.

In the fifth and sixth years it was almost a bed of red clover, and it has continued pretty good even to the present year.

I have

tubes are shorter than those of the other; but the clover has been so much cultivated in England for near a hundred years past, that the seeds have been scattered over most of the English pastures; so that there are few of them which have not clover mixed with the other grasses: and this has often deceived the botanists, who have supposed that the meadow trefoil has been improved to this by dressing of the land." As we have laid this entire passage before the reader, he is now enabled to judge how far Mr. Mills has mistaken Mr. Miller's meaning. E. R., O.

I have since experienced *red clover* to be the reward of manuring a cold clay with coal-ashes, even in the year immediately following the spreading of it, when it has been laid on in autumn, and well spread, and *moderate* rains or snows have fallen in winter; I say *moderate*, for *violent* rains would probably have a contrary effect, unless the quantity of the ashes was very great, and the soil not very cold.

A friend and relation of mine, in the west riding of this county, says, that he always screens, through an iron sieve or riddle, his coal-ashes. The cinders may burn again, and their ashes may be laid with that advantage upon the ground, which it would not receive from the whole cinders.

Another gentleman of that neighbourhood, hearing this conversation, observed, that there is no occasion to have the trouble of screening the ashes; for by throwing a moderate quantity of quick lime upon the heap, the cinders will soon, by its heat, be dissolved to ashes.

In such a coal country as the west riding of *Yorkshire*, cinders may be of so small value as not to balance the expence of sifting. However, it is certainly bad management to lay cinders on the ground; for they continue there *whole*, and *useless*, if not *pernicious*, by covering the roots of the grass.

II. The *white* or *Dutch clover* is, gentlemen, certainly a most excellent grass. I have hitherto thought it much more proper for feeding down with cattle, than for cutting for hay; because it seems not to grow high, and therefore is not likely to produce a very burthensome crop of hay. I have thought also, that this grass would be eaten with most advantage by sheep, because it is very fine, very sweet, and puts out flowers when its stalks are so short that these flowers seem to spring immediately out of the ground; so that these near eaters, sheep, will have here a continual feast. Probably from the apparent advantage which sheep receive from this admirable grass, is it called *lamb's sucklings*.

I am told, however, that tho' *white clover* is an excellent feed for all kinds of cattle, it is also an excellent grass for hay, of which, on a good soil, it will produce a very burthensome crop, as it spreads extremely thick, though it never rises very high : and as it flowers almost immediately after it is cut, it will afford a most excellent aftermath, especially if a second crop be not taken.

It is produced on grounds where it has not been known before, by warming manures ; though, on cold soils, more of this kind of manure, or longer time, is required to produce it than the *red* or *purple* clover.

Some years are very favourable to its production, inso-much that it will appear on almost every soil. The present year is one of them : and he who can investigate the causes why particular years are thus favourable to this excellent grass, will probably do a great service to society ; for by *art* we can generally imitate the operations of *nature*, at least so far as natural causes depend on heat and dryness, cold or wetness. But I fairly own, gentlemen, I am unable even to *guess with probability* at the cause of this favourableness of years.

The white clover is a *permanent* pasture, and therefore deserves our attention much more than if it wore out in a few years, as most of the other clovers are said to do.

This species of clover is well known to have obtained the name of *Dutch*, because great quantities of its seeds are annually imported into *England*, either by the *Hollanders* directly, or by us from them ; that industrious people collecting it in the *Netherlands*. Our writers on agriculture have assured us, that we can gather as good seed in our own fields as we can buy of them ; and with pleasure, gentlemen, I inform you, and by you my countrymen, that great quantities of this seed are annually saved for sale in the west riding of this county, where (I am credibly informed) one clergyman last year made full forty pounds of the seed arising from one clove*.

III. The

* The society for encouragement of arts, &c. has offered, very properly, a premium of twenty pounds for sowing the greatest quantity of this admirable seed. COMB.

III. The *hop clover*, or *yellow clover*, which is *Bauhin's* "*Trifolium pratense luteum, capitulo lupuli, vel agrarium,*" is also a very good sort. It is strongly recommended by these circumstances, viz.

1. It not only *grows*, but *flourishes*, on the most barren sands, and therefore must be a very proper grass to cultivate on such *unhappy* soils, where hardly any other grass, which is worth notice, will grow at all.

2. It is not apt to swell cattle, as other clover does.

3. In good ground it will continue long, and bear a very good feed or crop, as Mr. Tull, prejudiced against clovers, confesses: and, by its flourishing both on *sands* and *clay* which have not been ploughed for many years, it seems likely to continue long in any soil.

I never saw it grow otherwise than naturally in all this country, the north; but it is sown, as the other clovers, in many parts of the kingdom; and some of your correspondents, who are acquainted with its management and success, would do an acceptable service to the public, and us northern men in particular, if they would inform us, through your channel, how many pounds of seed to the acre they sow, what quantity they reap from an acre, and how many crops they usually take, with any other circumstances relative to it, which we may be supposed to wish to know, particularly, whether they sow it with or without corn*.

IV. Mr. Mills mentions another species of the *hop* or *yellow clover*, which I know not how to distinguish from the former. It is with him the "*trifolium luteum, lupulinum, minimum.*" He calls it also the *black seed*, or *noneseed*. This last name seems plainly derived from its excellence†.

V. There is a species of *yellow clover* which cannot, I think, with propriety, be called a *trifolium lupulinum*, as
having

* We should be obliged to any of our correspondents who will comply with Mr. Comber's request. E.

† Your ingenious correspondent J. J. calls the *white* or *Dutch* clover-seed *noneseed*. See page 359. of Vol. II.

having the *capitulum lupuli*, the heads of its flowers, like the hop *clover*; but it seems well to agree with the other part of the description, as it is indeed the *minimum*, the least I ever saw of the *trefoil* or *clover* kinds. It has flowers exactly resembling the oval ones of the *red* or *purple trefoil* or *clover*, but very small. It grows extremely low, but spreads very much, and is very sweet. Like the hop clover, it thrives very well in sands, and is often found on dry banks, when not to be met with in the adjoining fields, though of a better soil. It is not unusual also to find it on grass-walks which are mown pretty close, and walked on frequently, if their situation be high and dry; and from such an one I took the specimen I send. (See plate I. fig. 4.)

I hardly know any grass which looks so well on walks which are not kept quite smooth shaven; for its vividly-green leaves, and lemon-coloured flowers, make an agreeable variation. Under each of the small flowers, *a*, is formed a bunch of hard green seeds, *b*, which soon, on the falling away of the flower, grows much beyond the size of the flower, as at *c*, *c*, *c*.

These seeds, if mown or eaten whilst green and unripe, must be very nourishing to sheep or other cattle; and I should think this grass very likely to deserve the name of *nonesuch*.

The circumstance of these species of clover thriving in sands, renders them well worthy the attention of some of our colonies, in which many other good grasses will not thrive for want of moisture.

I am, GENTLEMEN,

To you and the public,

East-Newton,

An obedient, humble servant,

July 12, 1764.

THO. COMBER, jun.

P. S. Since I wrote the above letter, I have found and send a specimen of another yellow trefoil, (see plate I. fig. 5.) which differs from fig. 4. chiefly in these points, *viz.* first, that its flower, *a*, is *larger*, and *thicker set* with leaves;

leaves; and, secondly, that it does not turn out a large bunch of seed like the other.

I would observe, on these small species of trefoil, that they may, perhaps, be capable of great improvement by culture, since we are assured that the saintfoin, which, with our culture, cuts so respectable a figure, is, in the place of its native growth, though a much warmer climate, so contemptible a grass, that one would not believe any body should *think* of cultivating it.

N U M B E R . XXIX.

Of the Flote Fescue, its Names, Nature, and Uses.—Observations on a nameless Grass, sent to the Editors of this Work by the Rev. Mr. Comber.—A Proposal for gathering by Hand Grass-Seeds with most Convenience; and Desiderata from the Society of Arts, &c. on the Subject of gathering of Grass-Seeds.

GENTLEMEN,

I Have sent you a specimen of what appears to me unquestionably the true *flote fescue*, (see plate I. fig. 6.) and shall add such observations concerning its *names*, *nature*, and *uses*, as have occurred to me since I found it.

Mr. *Stillingfleet*, that curious enquirer into nature, with great and laudable candour, owns his ignorance of the qualities of this plant. Hints therefore relative to it may, with more reason, be supposed acceptable to the public.

As to its *names*, I think, there is not the least doubt, which can be entertained by any reasonable enquirer, that the *flote fescue* is the same grass as is called *flote grass* by the *industrious*, *intelligent*, and *ingenious* Mr. *Ray*, in his *Hist. Plant.* page 1264, under this description, “*Gramen aquaticum geniculatum spicatum.*”

It seems also to me to be certainly the *river-grass*, the *gramen fluviatile* of old *Parkinson*, though his delineation, as usual, is *rude* and *imperfect*; for he represents two or
three

three spiked heads as coming forth together; whereas, in reality, these heads come out of the same stalk at some distance from each other.

Mr. *Stillingfleet* thinks our *flote fescue* the same plant as is called “the longest trailing dog’s-grass,” or “*gramen caninum supinum longissimum*,” by *Ray*, in the Index of dubious plants at the end of his *Synopsis*; and said to grow at *Madington*, in *Wiltshire*, and some parts of *Wales*, to the length of twenty-four feet; and used for fattening of hogs.

Our *flote fescue* seems not to grow to this length; though I know not what its length may be in the deepest part of the marsh whence I gathered it; for I was obliged to gather at the edge of the marsh, where the grass is shortest, (lest I should have been very much wetted;) and yet I found it even here many feet long.

Mr. *Mills* thinks that Mr. *Stillingfleet* has not consulted Mr. *Worlidge*, who (in his *Systema Agriculturae*, page 32.) calls this grass *extraordinarily sweet*, and ascribes its length to the washing down of sheep’s dung from the high grounds.

This last-mentioned grass, gentlemen, seems, however, to be the same with that described by Mr. *Norden* in his *Surveyor’s Dialogue*, of which I sent you an account in a former letter, to which I refer you. (See Vol. II. page 349.)

The only circumstance which leads me to think that this grass of Mr. *Ray* and Mr. *Norden* is not the same as our *flote fescue*, is, that Mr. *Norden* speaks of making hay of that long grass in a meadow; whereas our *flote fescue* is a *water-grass*, and cannot be made hay of, at least without being dragged from out of the water, and exposed to a hot sun on dry ground.

As to the nature of this *flote fescue*, (which agrees exactly with Mr. *Stillingfleet*’s delineation) I found it in a marsh always covered deep with water, even in the hottest summers, and overflowed at high water by the river *Rye*.

This account of its situation agrees well with that which Mr. *Dean*, of *Ruscomb*, in *Berkshire*, gave to Mr. *Stillingfleet*. See *Mills’s Husbandry*, Vol. III. page 338.

It

It is now in full bloom. I know not the time when its seeds ripen, but propose to watch it this year, and transmit an account to you, if you desire such. I have not observed this grass any where except in this marsh; but probably it may be found in other places near the river *Rye*, or other rivers; and of this circumstance also I shall inform you, if requested*.

As to the *uses* of the *flote fescue*, Mr. *Stillingfleet* represents it, in Mr. *Dean's* opinion, as an heartening food for horses.

An excellent property surely it is, to give strength to that noble animal the horse. Mr. *Dean's* opinion was founded on this circumstance. A piece of ground, covered with the *flote fescue*, of about four acres, more than kept in good heart five cart-horses from *April* to the end of harvest. Mr. *Stillingfleet*, indeed, found among the *flote fescue*, brought as a specimen, a mixture of the *marsh-bent*, (a grass with which I am not well acquainted) and therefore doubts how far this grass might contribute to the keeping up the heart of these horses. But I have observed, that the edges of the marsh, whence I gathered the specimen, are much trodden by horses; and the *flote fescue*, the only grass in the marsh, is eaten, almost every stalk, so far as the horses could go without being set fast in the marsh, though there is great plenty of other grasses in the adjoining pasture, and plenty of water in the neighbouring river: whence I conclude, that the horses would not have come to this marsh, and eat its edges, did they not love the *flote fescue*; and what animals love, is generally very wholesome for them. It appears also to be a very juicy, nourishing grass:

If the *flote fescue* be the grass above described by Mr. *Ray*, as Mr. *Stillingfleet* thinks, another use of it, or at least of its roots, is to fatten hogs; an use to which Mr. *Norden* tells us his surprisingly-long grass is applied.

However this point be, *Linnaeus*, that accurate observer of nature, assures us, (in his *Flor. Suec. Art. 95.*) that if

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S

horses

* We should be glad of any further particulars relative to this grass, if not too much trouble to Mr. Comber. E.

horses are kept from drinking for some hours, the *bran* of this grass will cure them of the bots. And, perhaps, a similar quality in the grass, when eaten green, makes horses which feed upon it thrive; the bots being frequently the cause why they do not thrive.

But another use of the *flote fescue*, which must not be omitted, is mentioned by Mr. *Stillingfleet*, viz. that the seeds of this plant are gathered in *Poland*, and sold under the name of manna-seeds, for the tables of the great, on account of their *nourishing quality* and *agreeable taste*. (He refers us to *Amoenit. Academ.* Tom. III.) If this be the case, (and there *seems* no reason to doubt) the *flote fescue* becomes a respectable object of *commerce*, and therefore more worthy a place in your *Museum*, &c.

Mr. *Stillingfleet* says he has often observed a clamminess on the ear of the *flote fescue* when its seeds are ripe, which tastes like *honey*, and may probably have given the name of *manna* to these seeds.

I have sent you a specimen of grass, (see plate I. fig. 7.) which I understand agrees with none of the society's specimens. This I can easily believe. I call it a *nameless grass*, because I know no name by which it goes with us. The truth is, I never saw it in any meadow but my own, nor ever before this year, nor in any part of this meadow, except such as has been dressed with the richest manure, viz. human ordure, &c.

I will now give you some observations on it.

I. I apprehended the highest shoots of the grass, which are small, and without seeds, to be the remains of heads which had shed their seeds; but on examination I find, that every stem has *one* * of these heads at the summit; and that the other heads, when divested of seeds, have no such appearance; whence I conclude, that these highest heads have contained the *farina fecundans* for the inferior seed-bearing heads.

II. Though the stalk and leaf of this grass have in them nothing which promises much, yet the quantity of seed,

* The specimen sent us by Mr. Comber has three such heads, all which may be for the purpose he mentions. E.

seed, its firmness, &c. seem to declare this grass a nourishing food, if mown before the seed is shed.

III. The state of the seed, *b, b*, in the specimen I sent, seemed to be near approaching to ripeness. It was gathered the latter end of May.

IV. None of the seeds of the other grasses in the meadow were nearly ripe; so that, if this grass be propagated, it should be sown alone, in order to be reaped very early.

V. From the circumstances of my finding this grass only in one meadow, and the parts of that meadow which had been manured two or three years ago with the richest manures, and particularly human ordure; and my finding it this year for the first time, and in great quantities; I conclude that the seeds of this grass, like many others, are concealed in the earth, and only brought to light by *very particular fermentations*, the strength of which probably is proportioned to the strength of the grass to be produced.

VI. I have since, in this month, July, gone over the ground on which I found the specimen, and cannot find ~~one stem~~ of the grass, though no cattle have broke into the meadow; whence I conclude, that the stems of this grass, like many strong seed-bearing ones, having exhausted themselves by bringing the seeds to perfection, have died and disappeared.

Indeed, when I gathered the specimen, I judged the seeds to be near perfection, and the stems and leaves to be in quick decline.

VII. As the seeds are shed, it is probable that they, falling on the surface of the ground, may come up the next spring, though the ground should have lost that fermentation which gave rise to the original stems.

I propose, gentlemen, to continue this meadow in mowing another year or two, and will make what further observations I can on this grass in this close, and endeavour to find it elsewhere, and learn of others what I can relative to it; and communicate the result.

As no very great quantity of seeds of good grasses can be reasonably expected to be found in pastures, because

the cattle which *like* will *eat* the several heads; and as one cannot traverse meadows to gather them without doing much damage, I shall suggest a method, which seems least inconvenient, of gathering these seeds, if the meadow cannot conveniently all of it be cut at the time when the principal seeds are ripe.

Let a path be mown through the meadow with a very short garden-scythe. The gatherer may then begin his search among the grass mown, and extend it on each side of the path as far as he can reach, without doing damage. He may *pluck*, or rather *cut with scissors*, the heads of the grasses, and put them into a pouch, and sort them at home; but if he gathers grasses which easily shed their seeds, it will be prudent to have as many pouches as he gathers grasses; otherwise he cannot safely use the seeds in the bottom of his pouch, as pure ones.

The inconvenience of making so much hay as grows on the paths thus cut, cannot be great, if the owner wants not the grass for green fodder; if he does, it will be no inconvenience at all.

If the seeds wanted are not ripe at the time when it is most convenient to mow the meadow, the only way to have them in perfection is, to instruct the mowers, when they meet with a patch in which the seeds wanted prevail, to leave it uncut. A skilful gatherer need hardly be admonished, that it will be necessary to expose the heads, when cut, both to sun and air, to dry them perfectly; and that, *probably*, the seeds will keep better, to the time of sowing, in the heads, thus dried, than in any other way.

The time of the several grass-seeds becoming ripe must (as you inform me by letter) differ according to the variation of soil and season: but the society would have done laudably, had they informed their candidates of the *general* time of ripening of the several seeds, especially as Mess. *Mills* and *Stillingfleet* (to whom alone they refer such candidates) say nothing on this subject.

It were also to be wished, that the society had published delineations of the several grasses which they would encourage, in the several stages of their growth, *coloured*,
and

and with notes below of their situation, and time of *flowering* and *seeding*, and short *criteria* of the ripeness of the several seeds.

Want of instruction in these, and perhaps other points, must be a great discouragement to such as would become candidates for the premiums proposed by your society, in the opinion of,

GENTLEMEN,

East-Newton,
July 13, 1764.

Your frank correspondent,
THO. COMBER, jun.

P. S. Since I wrote the above, gentlemen, I have received your tenth publication, and am glad to see the attention of the public to the culture of grasses, awakened by a member of your society, who, at the bottom of No. LXXXVIII. Vol. II. p. 297. styles himself a *By-Stander*.

The circumstance of the *sheep's fescue* being a *forward grass*, is a recommendation of it; and its perfecting its seeds early in spring, may account for the difficulty of finding it lately in grounds where, I am satisfied, I found it pretty plentiful a month or two ago. The *By-Stander's* hint, that the *stote fescue* may be the grass which, in a surprisingly-short time, fattens *lean* and *old* cows, deserves attention; though the circumstance of the ground's being flooded for months together in the winter season, is far from being sufficient to prove this grass the *stote fescue*: on the contrary, if the ground is not flooded all summer, I apprehend the *stote fescue* will not grow in it: but whatever that grass be, it deserves enquiry.

At the edge of another marsh I have found more of the *stote fescue*, but in a small quantity, and less vigorous. The parts which seem to contain the seed, are very little, and, upon touch, break from the stem. Either these plants are *sickly*, or *much riper* than the other; and if the latter, I think there is no hope that the seeds, called *marina-seeds*, will be gathered from them.

I have examined the former marsh; but the late rains have so filled it, that it is scarcely possible to come at any of the *stote fescue*, which now, in general, begins to grow yellowish

yellowish like wheat. I, however, got one stalk of this colour, and, somewhat to my surprise, found it to have a *sweet clamminess*, and at the bottom of one particle, which may be considered as the hood of the seed, a white seed, but small and soft.

In making hay in the meadow above mentioned, I found a considerable quantity of the *nameless grass*, the seed unshaken.

July 26, 1764.

NUMBER XXX.

An Examination of Ruricola Glocestris's Calculation of Expences in Reaping of Wheat with the Sickle and the Scythe, and of his Method of Stacking of Wheat, and of the most proper Track of the Wheat-Mower's Feet, &c.

GENTLEMEN,

THE importance of the subject was my only motive for writing to you upon the mowing of wheat; and it is evident, from my letters, I was desirous that all which could fairly be said on either side of the question should be advanced, inasmuch that though I inclined, upon the whole, to encourage the mowing of wheat, yet I was ready to acknowledge the inconveniencies which attend it; and I hoped, that whatever arguments could be advanced, either for or against it, would have been both *produced* and *received* with candour.

I have had the satisfaction to find my honest endeavours seconded by others of your correspondents, and that they have received the reward of approbation of one of your sensible correspondents at least. (See page 365. of your Second Volume.)

Another of your correspondents has, however, attempted to discredit the practice of mowing of wheat, by a pompous calculation, designed to evince that there is only six-pence *per acre* saved by employing the *scythe* instead

head of the *fickle*; and therefore, as there must be *some* waste in the former method, which might be avoided in the latter, this is a *very moderate* allowance. (See Vol. II. page 360.)

I will be so complaisant to your correspondent, as to suppose, that the prices of reaping an acre of wheat with the *fickle* may be five shillings and six-pence, and with the scythe five shillings, in his neighbourhood; though this supposition is an act of high complaisance; for mere assertions deserve no credit, when they seem to contradict probability.

What conclusion would follow the supposition of this assertion to be founded in fact? Truly, only this; that in that neighbourhood it might be advisable to reap wheat rather with the *fickle* than the scythe! This is a very uninteresting fact to people out of that small district, and very little deserving the attention of the public, and nothing at all to the *avowed purpose* of his introducing his calculation with parade, *viz.* to illustrate his assertion, that "when hands can be procured, and the wheat fully "ripe, there is no method will ever exceed that of hand-reaping, if *decency, saving, and dispatch* be considered as "going hand in hand:" (page 361.) for this assertion is *general*, or rather *universal*; and therefore his calculation to illustrate it should have been so, and not *particular*; for the *conclusion* can be no stronger than the *premises*.

Let us now examine this calculation in a more extensive manner, not upon the footing of a practice in a small district, where, perhaps, after all, *very little* wheat is sown; but as the practice is managed where brought to perfection: for, in order to estimate the benefit of any practice, gentlemen, (as you well know) we are not to take our estimate in first attempts to establish it, but as it appears where established.

The mowing of wheat is established by the experience of many years in our *Yorkshire* wolds, as your sensible correspondent, *A Lancashire Farmer*, supposes from my letters (see page 365. of Vol. II.); and here we must examine

amine its utility, and conclude it will be attended with like utility in all other places, where it shall be established, if extraordinary circumstances hinder not.

I have, in a former letter, (see page 244. of your Second Volume) informed you, that, in a middling year, a mower on the wolds will cut two acres of wheat in a day; that he has a gatherer; and that one binder follows two gatherers. The crop of twenty-five bushels on an acre is a middling one, as *Ruricola Gloucestris* calls it, when he institutes his calculation upon it. (See page 361.) We may therefore confidently reckon, that three men and two women on the wolds do four times as much work, in mowing of wheat, as three men do in *Ruricola's* neighbourhood with the sickle; so that the difference of expence in cutting down and binding of one acre with the sickle, and four with the scythe, is only the double of one woman's day-wages.

Monfieur Du Hamel, surely a very competent judge, tells us, (Tom. VI. page 247.) that "the scythe dispatches so much more work than the sickle, that the difference of expence between reaping an acre and mowing it is nearly in the proportion of five to two."

In order to avoid the principal waste occasioned by mowing, viz. the leaving of scattered ears, a man with a common swathe-rake, or rather a boy with a horse, and a larger swathe-rake, must run over the ground, and heap the rakings; and this will be done with so much expedition, that the charge will not be six-pence an acre; so that, if we allow one shilling *per* day for the woman gatherer, and one shilling and six-pence for the boy and horse, the three additional acres will be cut, bound, and raked, for little more than one shilling each; a considerable saving surely in expence, as each of these acres, according to *Ruricola's* calculation, would cost, when cut with the sickle, five shillings and six-pence.

This gentleman informs us, that, "if dispatch be the only thing aimed at, mowing must be preferred, though not in a very great degree," (page 361.) Surely a manufacturer would stare to be told, that if he could perform

form *four times* as much work as usual in a given space, he had not *very much* improved dispatch. He would think that any one, who advanced such a paradox, was, in *Ruricola's* own language, giving the strongest indication of a mind in bondage to the *vain emulation of conceitedness*.

Ruricola allows the mowing of wheat preferable to reaping it with the sickle, where hands are scarce (see page 361.): and are they not so in all great corn counties? Is it not for the benefit of these, that the method of mowing of wheat is proposed to be introduced? Is it not notorious, that where hands *are not scarce*, labourers go to harvest in places where they are scarce; nay, whence they *are scarce*, to places where they *are scarcer*? Is it not notorious, that, as your sensible correspondent, the Lancashire Farmer, observes, (page 369.) "Manufacturers now often *severely* feel the want of the hands which the necessity of getting in the corn, of course, deprives them of for the space of several entire weeks; by which means they are often divested of the power of executing the orders they may at that time receive from the merchants?" Is it not notorious, that (as several of your correspondents have observed) the *labourers* are unwilling to forward the success of new methods, especially if thought inconsistent with their immediate interest, and that therefore *Ruricola* should rather have contributed to give the method of mowing (which, if attended with success, is of the utmost national importance) a fair trial, than have discouraged it by so fallacious a calculation as the foregoing?

It is confessed, that so many ears may, perhaps, be at the butt of the mown sheaf, as will be injured, by lying on the ground, to such a degree, that six-pence *per acre* for the loss may be a moderate allowance. (See p. 362.)

But what is this trifle, compared with the advantages of getting four acres down and up again in the time of one, and with little more expence?

I confess, gentlemen, I apprehend, that the loss occasioned by ears in the butt of sheaves mown, may be some-

what more considerable than is here supposed. I am told by the experienced woldsmen, that there is as great difference as possible in the neatness of the making up the sheaves; and therefore I would repeat my advice to the farmer to allow one binder supernumerary, rather than hurry his binders, and oblige them to bind slovenly (see page 261. Vol. II.); and add, that if a premium of *intrinsic* or *honorary* value were assigned by any gentleman, or considerable farmer, to the binder whose sheaves were neatest, probably we should find an amazing improvement in this important part of the work in a very few years.

As to *Ruricola's* supposition, that "a considerable quantity of corn is shook out by the sudden stroke of the scythe against the straw," (page 361.) it may be true, but ought not to be urged as an argument against mowing of wheat; for, in all probability, the same, or a greater loss will follow from the sudden stroke of the sickle against the straw, and in both cases arises from letting the corn stand till it be too ripe.

As to the temporary *stacking*, which *Ruricola* recommends; he is, by no means, clear in several particulars of his account: but from the best guess one can make of the nature of this stack, it seems to have no advantage over one lately proposed, which I examined, and shewed defective, except that a *cap-sheaf* is a better cover than some *loose ears*. (See page 251. Vol. II.)

Ruricola's stack is most evidently liable to that unanswerable objection, that its closeness excludes a free course of air, most necessary to *give, preserve, or restore*, dryness to corn. He appears plainly to have seen this objection, which I made to a *similar* one; and he has not made any attempts to invalidate it. This omission was more unpardonable in *Ruricola*, because he declares, his corn is carried into this stack immediately after it is cut, without the benefit of field-room; consequently, with much more likelihood of suffering from want of a free current of air.

He tells you, that "*weeds are no obstruction, as the butt-ends of the sheaves are exposed to the air,*" (page 363.) But they *should* be an obstruction; for, as
weeds

weeds are well known to be in the crop-ends of the sheaves, and no air can come at them, many maladies to the corn may reasonably be expected to ensue.

Towards the dextrous performance of mowing of wheat, it is of the highest consequence to be able to determine which is the properest motion and track of the mower's feet. Monsieur *De L' Isle* directs his workmen to form but one track with both feet, advancing in a posture nearly as if going to fence, one foot chasing the other; and he represents this method as *much the easiest*, adding, that the mowing of wheat with the feet in parallel lines, as in mowing of grass, almost killed his workmen.

This last assertion seemed to me very surprising; for, though I could easily perceive that in any labour, which consists in pushing forward, Monsieur *De L' Isle's* method must be best, yet I apprehended, that when a mower has a large sweep to fetch with his scythe, and an heavy swathe to deliver, it must be *very difficult*, if not *impossible*, to continue this labour while the legs advance in one strait line forwards; whereas the distance of the legs in the other method seemed to give firmness to the man, inclining alternately to each side, and strength to his stroke.

However, as I could not doubt that the experience of our *Yorkshire wolders* would inform me which motion was *easiest* and *best*, I resolved to enquire of them, and was immediately answered by a tenant of my father's, *born and bred* on the wolds, that when crops of wheat are thin, the mowers can advance with their feet in one line; but that, when they are strong, it is impossible: and by a workman of my own, who goes every year to the wolds, that in *oats* or *barley*, the mower advances with one leg before the other in a strait line; and that himself, a little man, has frequently been obliged to hop and jump to keep up with his fellows; but that he *never* saw on the wolds a crop of *wheat* so thin as to allow the mower to move his feet otherwise than in parallel lines.

The motion directed by Monsieur *De L' Isle* may be practicable in his country, but not in our's, where the crops appear to be much better and heavier.

Besides, our *Yorkshire* scythe is longer than Monsieur *De L'Isle's*, and therefore much less manageable in the method he prescribes. I have, gentlemen, a real pleasure in correcting my own mistakes, and therefore take this opportunity of observing, that I expressed myself *too loosely*, when I supposed a swathe of wheat on the wolds to be about three yards: it is rather two yards and an half; eight of my mowers, in very good grass, having this year taken as nearly twenty yards as possible with the scythes with which they would mow wheat on the wolds. Indeed one of them was *sickly*, and another *young*; but I apprehend as great, or a greater allowance should be made for the heavier swathe of wheat, than need be made on account of the sickness and youth of these two mowers.

Your sensible correspondent, the *Lancashire Farmer*, advises the *Northamptonshire* gentleman to procure three or nine good mowers from our wolds, who may *try* the foreign scythes, as well as *use* their own. (See page 364.) I had given the same advice, and offered my assistance, and wish he may have been supplied with some.

Notwithstanding the reason assigned by one of you, gentlemen, of threshing of sheaves without unbinding, (in note *, to page 260. of Vol. II.) I am persuaded experience would shew a considerable quantity of corn to remain in a sheaf thus threshed, which is quite lost when the straw is used for litter.

A good thresher can make up his loggins of two sheaves with sufficient neatness to please the nicest keeper of racers in the north: and it is amazing, that any man of sense will give a farthing more for a truss of straw for litter, because the tops of the ears may be a little more even in the sheaf than in the loggin.

If the straw of ill-threshed corn be given to cattle of any sort, the loss of the corn unthreshed out is not *absolute*; but if the straw be used either for litter or thatch, the loss is *absolute*, and the waste is (according to the principles of my profession) *highly sinful*; and where the custom is *general*, the loss must be very considerable, and

a reformation of high importance both to *individuals* and the *public*.

I must not close this letter without a remark, *viz.* that one ill custom introduces another. The practice of stacking wheat *immediately* after it is cut, made it necessary to let this corn stand till fully ripe; and this standing occasions a *great loss* by its shaking, probably by winds before it is cut, certainly by the instrument in cutting, and in removing, first to the temporary stack, and then to the barn*.

I am, GENTLEMEN,

East-Newton,
August 20, 1764.

Your humble servant,
THO. COMBER, jun.

NUMBER XXXI.

*Queries relative to laying down a Piece of Land in Grass,
and the Management of Lucerne.*

GENTLEMEN,

HAVING last Michaelmas taken some arable land into my own hands, with a view of laying it down to grass, in order to extend the lawn before my house, I have consulted my neighbours, both gentlemen and farmers, about doing it in the properest and best manner, but scarce any two agree in the method.

Some recommend its having a summer fallow to clean it thoroughly, (though already very clean) and sowing it next spring with barley or white-oats, together with ryegrass, and white-clover.

Others again advise its being kept in constant tillage till near Midsummer, and then laid down only with grass-seeds.

* The antients, who had made much greater advances in agriculture than for our own credit we are willing to allow, were wise enough to cut their corn before it was fully ripe. Pliny in his Nat. Hist. Lib. XXIII. saith, "*Secandi tempus cum spica deflorescere coepit atque roborari: secundum antequam inarescat.*" - Thus also Mons. Du Hamel. COMB.

feeds. Others are for giving it a fallow next summer, and then sowing it with turneps, to be fed off with sheep, and the spring following to lay it down with grafs-seed only.

As I do not understand much of husbandry, I take in your *Museum Rusticum* to improve myself, but find nothing therein to answer my present purpose: I beg it therefore as a favour of you, gentlemen, to give me your opinion in what method to lay it down, and with what kind or kinds of grafs-seeds for mowing and pasture.

The soil is a good loam, of a foot and a half or two feet deep, or better, on a chalk *.

I have

* It is not very easy for us to give advice respecting the management of land we have not seen, particularly when the description given of it is far from being full. Our correspondent does not inform us how long his field has been in tillage, whether it has been ploughed out of heart, whether it has been lately manured, when and with what dressing, what was the last crop, whether the stubble has been turned in since harvest if it was under corn, nor, finally, whether the couch-grafs, he mentions to have injured his lucerne, infests the whole field, though we should imagine not, as he says the field is very clean.

It may be esteemed as a constant maxim, that if land is much exhausted by frequently-repeated crops of corn, unassisted by manure, and is then laid down to grafs, whether natural or artificial, the produce will not be great: it is much the better way to lay down arable lands (we mean where manure cannot be had at reasonable rates) before they are impoverished, and to break up pastures before they grow mossy, hide-bound, or fall greatly off in their produce; yet, after all, no certain rule can be fixed in this matter, so much must depend on the nature and quality of the soil, and the situation of the land.

As nearly as we can judge from the information given us by our correspondent, we are of opinion that he had best get his field ready for sowing white-oats, allowing at least two ploughings, which may immediately follow one the other; and he should sow only half the quantity of seed he usually allows; suppose, for instance, two bushels, taking care that the seed be good.

When the oats are in the ground, about the middle of April, we would advise him to sow over them some natural grafs-seeds, (the sweepings of a hay-loft) mixed with the seed of ray-grafs and white Dutch clover; of the last about three pounds to the acre, and of ray-grafs about half a bushel.

These

I have made a trial of the lucerne in a part of the above field, about an acre and a half, which I had dug and cleaned, in winter, of the weeds, and transplanted it (from a nursery) in rows of three feet distant; and the plants eighteen inches asunder; which hath succeeded so well as to cut twice in a year, but by no means answers the expectations I had of it, being over grown with couch-grass, probably the ill consequence of not giving it a summer-fallow to clean the ground thoroughly, being a young farmer, and in too much hurry.

Query. Would you, gentlemen, advise me to plough it entirely up; or would you recommend trying any other, and what method with it, such as hand-hoeing, for we have no horse-hoeing with us in our part of Berks*?

Your answer will greatly oblige,

GENTLEMEN,

Your most obedient, humble servant,

Berks,

J. J.

Jan. 28, 1765.

A country gentleman.

These seeds are to be strewed thick on the land; and if we rightly comprehend the nature of our correspondent's field, this method will not fail answering his purpose. The oats will be a good crop, and the ray-grass will disappear in a year or two, as the natural grass spreads and gets a-head. N. A. T.

* The best thing this gentleman can do, in our opinion, is to prepare an acre and a half of ground, and make it as clean as possibly he can, by several ploughings, this next summer: towards the middle of August, let him take up his roots and transplant them into this prepared land, in rows three feet four inches asunder, and at least one foot distant in the rows, according to the directions laid down in our Third Volume, page 352, by the ingenious author of the *Essays on Husbandry*. The intervals should, by all means, be stirred with a hoe-plough, or with a small Rotheran plough, a description of which we shall soon give in this work. This is what we think our correspondent had best do; but if he should not approve of it, he may cause the intervals to be dug by hand with spades, and cleaned of the couch, keeping afterwards the weeds under as well as he can with hand-hoes; but this last method he will find by far the most expensive, besides that he will not, in the end, probably be able to get the better of the couch; and there is no plant can so little bear such a neighbour, as lucerne. N. A. T.

N U M-

NUMBER XXXII.

On the best Method of managing poor Land, and the Benefit of Lime as a Manure.

GENTLEMEN,

THROUGH a multiplicity of business, I have not had leisure before to comply with your request, (see Vol. II. page 307.) to enter more at large on the management of my poor land; and have been, for some considerable time, in expectation of seeing, in the *Museum Rusticum*, the description of two machines for cutting and bruising of goss, or furze, as practised in Wales, with the engravings, illustrating the same, as you mentioned, in Vol. II. page 118, a gentleman had promised them to your work*.

I shall first mention, that this last year I sowed the six-acre field, which I gave an account of, Vol. II. page 306, having limed the remaining two acres, as I had done the rest: it was sown with barley, so late as the latter end of May, after three ploughings, not being able to get out the grass before: I had great plenty of straw, and it was clear from wader and buddle; but, being sown so late, the barley was lean, as is indeed almost all in this neighbourhood this year. However, the effects of lime on light sandy land, are very clearly proved, by three years experiment, on this piece

* The model of the machine mentioned by this gentleman is in our possession, and we shall perform our promise of giving an engraved representation of it; but we must wait till we have an ample description of the machine from the gentleman who favoured us with the model, which he has promised to give us, together with an account of its performances, both in bruising furze, and grinding apples for cyder. If our correspondent should, in the mean time, be called either by business or pleasure to town, he may see the model, by only giving himself the trouble of calling on Mr. R. Davis, bookseller, the corner of Sackville-street, Piccadilly. E.

piece of land, which, for thirty years before, was always full of waldar and buddle.

I had the year before last a very good crop of oats, and this year a pretty crop of peas, of about eight acres, on the same kind of land that I limed two years ago; which before, as pasture, produced hardly any thing but what we call brakes, or fern; and I have this year sown it with wheat.

I generally sow a pretty many oats, and find this crop to answer as well, or better than any other.

I had this year three pieces of wheat; one very good, the other two very indifferent: and, I am sorry to say it, this year wheat, in this part of the country, yields very badly.

I make no summer-land on this light land, but plough sufficiently to get out the grass; and, as late as the middle of June, sow buck or French wheat, and sometimes turneps: these failed this year, and I am almost certain of a crop of buck-wheat, and in general it is worth as much as barley; and once ploughing afterwards makes a good wheat tilth, the ground being close after the French wheat, which suffers hardly any weeds to grow amongst it: and I much wonder that more is not sown in such kind of land; as nothing, when ground, fats swine (particularly hogs) faster, nor is there any pork sweeter, or firmer, besides the benefit of only once ploughing afterwards for wheat.

I built the lime-kiln this summer, which I mentioned, in my letter, Vol. II. page 118, I intended to do; and have burnt about eighty load of rock-stone into lime, mostly with furze; and it was exceeding good, each load consisting of sixty-four bushels; and intend yearly burning about the same quantity for this poor land: and I am so very fond of this manure, that I have built no less than four lime-kilns, within these five years, on different lands, at two of which kilns I have had lime made with a kind of peat I have growing, (in tunnel, or funnel kilns) instead of coal; in one of which I burn chalk cut in pieces, and

the other small rock-stones, one being handy for the chalk, and the other for stones: and I believe lime made in this manner, or more properly this manure, as there is a large quantity of the peat-ashes with the lime, will last longer than common lime.

I am obliged to a very worthy clergyman in this neighbourhood for this manner of burning lime; he has taken great pains in the improvement of lands, thinking it a most noble art.

I have sown several acres of lucerne, both in furrows and broad-cast, upon tolerable good light land, and with care, but have not found it answer; and am inclined to believe it will very seldom do, unless upon very good land; having at the same time sown about twenty perches in my garden, upon a particular rich, light soil, which the first year yielded me four cuts, and the two last years five large cuts. I sowed, in the beginning of September last, two acres of Mr. Rotque's burnet, and the beginning of November (I am afraid too late) one acre and a half of timothy; but cannot, at present, say any thing concerning them†.

I have twenty-five acres of wheat sown this year on land limed, which at present looks exceeding fine; seven acres of which are on a cold, poor clay; the other on poor, light lands; and I have seen often lime, on poor clays, produce surprising crops, if a sufficient quantity is put on (a bushel, unslaked, to every perch); and on this land, I imagine, it acts by a strong fermentation; and on the light lands it closes so much, that you would hardly believe it was the same land.

As I am a great lover of improvements, I may, as opportunity suits, communicate real facts: and if in this letter

† We shall be greatly obliged to this correspondent, if he will give us an account of what progress his burnet and timothy grasses make. Burnet requires, to succeed, much the same soil and management as lucerne, and timothy-grass should be sown on a low, damp, marshy soil: perhaps on such a soil our correspondent has sown it. We wish he had mentioned these particulars. E.

ter I have not been explicit enough, I shall be glad to be more particular*.

I am, GENTLEMEN,

Your most humble servant,

Jan. 12, 1765.

A KENTISH MAN.

N U M B E R XXXIII.

On the French Method of Cultivating Weld in Normandy.

GENTLEMEN,

I Do not remember to have seen any thing in your collection respecting the culture of weld; which is the reason of my troubling you with this letter.

A work lately published† has fallen into my hands, within these few days, in which I find an essay on the culture of this plant, written by Mons. D'Ambourney.

I perceive, by this, that the French sow their weld-seed in July, betwixt the rows of kidney-beans when they are in blossom; drawing along a bush-faggot to cover the seed. The beans are gathered by the time the weld is come up.

About Michaelmas, this gentleman says, the weld should be weeded and hoed, and in March following hoed again.

Towards the end of June, the second year, it is pulled, after a little fall of rain; and dried in the sun, against walls or hedges.

This writer says, the land will afterwards bear a crop of wheat without manure; or, if the soil is light, turneps may be sown, which will be off before there will be occasion to plough for barley. I find also, by this paper, that the French often sow weld after peas; for the doing of which particular directions are there laid down.

U 2

I wish,

* We should be extremely obliged to this gentleman, if he would frequently favour us with his letters, which are the more valuable, as containing facts resulting from his own experience. We should esteem it as a particular honour, to receive a letter from our correspondent's friend the clergyman. E.

† Foreign Essays on Agriculture and Arts.

I wish, gentlemen, you would reprint this essay in your work *, as I am sensible it would give great satisfaction to many of your readers; the author, Monf. D'Ambourney, of Normandy, being the same gentleman who discovered the method of using madder-roots green, for the purposes of dying; which method is also inserted in the above-mentioned Foreign Essays.

I should, with many others of my acquaintance, your readers, be much obliged to the reverend Mr. Comber, if he would give us such an account, or rather one more particular, of the prices of the implements of husbandry in Yorkshire, as you have already received from Hertfordshire: these are truly useful articles.

I am, GENTLEMEN,

West of Cornwall,

Your humble servant,

Feb. 20, 1765.

R. WILLIAMS,

N U M B E R XXXIV.

Excellent Directions for such as intend to try the new Method of Husbandry, with an Account of the Instruments necessary for this Purpose, particularly the several Sorts of Drill-Ploughs.

GENTLEMEN,

A GREEABLE to your desire, I shall give your readers some information concerning the drill-ploughs, and other instruments, useful in the new husbandry.

The

* It never fails giving us pleasure; when we can, by any means, oblige our correspondents; but they should reflect on what they ask. We mean not to derogate from the merit of the above recommended piece, nor any others contained in the work our correspondent mentions: on the contrary, we admit, that making the experience of foreign farmers known to the English cultivator, may have its use: yet we must, in this place, repeat what we have said before, that, through the favour of the ingenious, we have so many original pieces sent us for insertion, that we cannot, with any degree of consistency, admit

The foreign drill-ploughs have some good things in them, but are not of a right construction for common use; and Mr. Tull's, or those made upon the same principles, are still the best yet made public.

His latter practice was chiefly in wheat and turneps, which he sowed upon ridges for horse-hoeing; and the drills he particularly describes were intended for that purpose.

It is difficult to contrive a drill to sow all the common seeds, from horse-beans to turnep-seed; and no one of his will perform this: but there must be three of them; one for beans and large peas; another for common peas, wheat, barley, oats and ryes; and a third for turnep, and other such small seeds.

These drills will also sow upon the level, or upon broad lands, in equal distant rows; but as they sow but one or two rows, they are too slow for large business: so that those, who raise corn in that manner, will find it necessary to have other drills, made to sow more land in a day. This may be done upon his plan; and my large drills are so made, with such alterations as I found useful.

The largest of mine sows five rows at a foot distance, and performs well upon the level, but is rather too large for broad lands: I think, for common use, one that sows only four rows at that distance is better, and more easily managed. The lands should be made of a proper breadth for the drill to be used, or the drill suited to them. The higher the lands are, the drills should be the narrower, or have fewer shares.

There are three ways of drilling in equally-distant rows; viz. for hoeing with a horse-break; for hand-hoeing; or in close rows, when not to be hoed.

A middle-sized cart-horse, on walking, makes a path about fourteen inches wide: when such a horse is used, he should have a clear path about that width between the rows,

translations; and, indeed, there seems less necessity for complying with our correspondent's request, as, according to his own acknowledgment, the piece he recommends has already been published in an English dress. E. R. O.

rows, at the last hoeing : so that in drilling for this method of hoeing, the size of the horse, and of the plants, and their manner of growth or spreading, are to be considered. The greatest error is in drilling too close.

For hand-hoeing, the rows may be from nine to twelve inches, or upwards ; and if not to be hoed, from six to eight inches : but not so wide as eight, unless the land is clean.

Drills for sowing corn to be hoed should have all their shares in one line or rank ; and thus they will perform well to about nine inches distance, the land being in good order. But if they are set nearer together, there is not room for the clods and roots of weeds to pass between them, unless the land is extraordinary clean and fine, and the seed laid at a small depth. I have a drill made to sow nine rows at six inches distance, with a single rank of shares : but land is very seldom in order for so close drilling, in that manner.

It is, however, very convenient to have a drill for planting the rows near together, when clover is to be sown among the corn ; and in several other circumstances. This may be done with a drill that has two ranks of shares, which will sow the rows at six or seven inches apart.

I have tried several ways, but cannot bring Mr. Tull's drills to sow with two ranks of shares, without greatly altering the whole machine, and making it too complex ; which was the fault of his first wheat-drill, though it planted only three rows. The foreign drills are made in imitation of his first, and have the same fault. Mr. Duhamel's, it is true, has but one rank of shares ; but if they are set so near together as seven inches, his drill will not sow at all, unless the land is clean, light, and fine ; nor is the form of his shares proper for any other.

There is another defect in all these drills, which I have before taken notice of ; they cannot be readily altered to sow at any other distance than they were made for at first. Both these are considerable defects, and which I have endeavoured to remedy in a new drill, upon a different plan.

The

The seed-boxes are the nicest parts of Mr. Tull's drills. There must be one of them for each row to be sown. The largest, for beans, is made of wood; and those for corn and small seeds, of brass.

I cannot say, with any certainty, what these drills would cost. Mine were made at different times: and as I could not find any workmen, tho' ingenious in their way, who could make them from a drawing, I employed them by the day to make the several parts that could be so done. This I also found necessary, to prevent their making alterations, which they are very apt to do, by way of improvement, as they think; so that I was obliged to attend and inspect every thing, or to have them altered again, or new made. This is an inconveniency in making all new machines that are curious, and a considerable addition to the price.

I know not any workman who can make Mr. Tull's drills, and believe there is none: for these instruments are as yet in very few hands; and as they must be made by men of several different trades, no one can make them right, or direct the making of them, unless he understands the whole machine, which very few seem to do, for want of the necessary experience. As to drills for sowing more than two rows, upon the level or broad lands, I never saw any such, but my own.

But to give your readers some satisfaction in this matter, such a drill as mine, for sowing five rows at a foot distance, would, I think, cost about seven pounds; and one to sow the same number of rows at a less distance, near as much. If made to sow fewer rows, the principal difference, as to price, is in the fewer seed-boxes and shares; for the other parts must be nearly the same. The turnep-drill requires greater nicety in making than the other, and, though it has but one seed-box and share, would, I reckon, cost about forty shillings. I cannot be exact, for the above reasons, and also because mine are not all in the same form.

I should readily offer any assistance I could give your correspondents, who are inclined to practise the drilling-husbandry:

husbandry: but it may be advisable, that they first consider the nature of their land, what kind of crops they intend to drill, and in what manner; for it would be expensive, and not necessary, to have all the different drills, if they propose to use them only in some particular way. The above description will assist them to judge for themselves.

I have not yet tried any new drill with all the common seeds, but intend to do it the ensuing season; and if it fully answers what I expect, I may be able to recommend an easier and more general instrument than any of the above.

With regard to other instruments in the new husbandry, the hoe-plough is the chief. The difference between this and the common plough consists principally in the contrivance to make it turn a large or wide furrow, in order to plough an interval at one bout, which, if done with the common plough, would require two, or more. Mr. Tull's hoe-plough will perform this at one bout, though the intervals are near five feet wide. The plough itself is the same in every respect as the common two-wheel plough, only it may be made somewhat lighter and deeper; and as it has only a small plank and sharps, instead of the common fore-carriage, the expence of making it may be easily known.

In narrower intervals the swing-plough will answer the same purpose, and is easier managed. It should have a wide bridle at the end of the beam, of the same form as that to the Rotheran-plough. By this contrivance it is readily altered to plough a broader or narrower furrow, but not to such an extent as the former. M. de Chateauvieux's hoe-plough is also more limited in this respect, and the wheel is a disadvantage; for that, in turning upon the sloping side of a ridge or furrow, continually draws the plough to one side, and hinders its going steady.

Two things are to be observed in hoe-ploughing; to cut the furrows deep, and to turn them, in order to change and enlarge the surface. In this last point M. de Chateauvieux's single and double cultivators are defective, particularly the single one. They are good instruments for some

some uses; but I cannot recommend them to be commonly used instead of the hoe-plough; and therefore, though I have all his cultivators, I shall defer saying any thing particular of them at present, as I would rather advise your correspondent Y, if he intends to try the horse-hoeing of wheat, to make use of a hoe-plough, preferably to any other.

The drill-ploughs, horse-hoe, and a couple of small light harrows, are the necessary new instruments for the horse-hoeing culture. A heavy, short stone roller is of great service, if drawn along the intervals when the mold in them is very dry, hard, and cloddy. There are some other instruments, that may be used occasionally; but these will be sufficient at first.

As to hoeing-instruments for corn or other plants in equally-distant rows, they are various, and more than I can describe. I have contrived some new ones, but cannot yet say whether they are much preferable to the common ones. It may be sufficient at present to observe, in general, that those are the best which go deepest, loosen and break the soil most, and turn or change the surface of it; for the destroying of weeds is but one of the advantages of hoeing*. I am, GENTLEMEN,

Middlesex,

Your very humble servant,

Feb. 11, 1765.

E. S.

NUMBER XXXV.

An Account of the best Method of planting Elm-Trees on a cold, stiff, clayey Soil.

GENTLEMEN,

I Am much surpris'd to have seen in your work so little on the subject of planting: some good directions on this head could not fail being very useful to many gentlemen who lead a country life, and have little else to do but to improve their estates, and be useful to their neighbours.

VOL. IV. No. 18.

X

My

* We have embraced the first opportunity of inserting this letter, on account of the importance of its subject, and hope the writer will continue to favour us with his valuable communications, which, we candidly own, add greatly to the merit of our work. E. R. T. O. N. A.

My present intention is, to inform you of an experiment I made many years ago, of planting some elms on a stiff clay, a soil which is, in general, in this county, thought not so well to suit them as others of a lighter and drier nature.

In the year 1736, I was, by a worthy nobleman, to whom I was tutor at college, generously presented, on the death of the last incumbent, to a rectory in this county, of sufficient value to make me sit down easy and contented in life. My glebe was pretty extensive, and on it stood the parsonage-house; but it was old, ruinous, and greatly out of repair, as well as the out-houses which belonged to it.

As I was then unmarried, and was possessed of one thousand pounds left me by my good father, I soon came to the resolution of rebuilding this house, which I accordingly did, in a more advantageous situation, at the expence of five hundred pounds.

When my house was finished, I was desirous of having some trees planted near it, which might serve to shelter it from the cold north-easterly and the violent south-westerly winds.

I had an objection to oak, because this tree is so slow of growth, that it was not at all probable I should live to enjoy either pleasure or advantage from its shelter: this it was induced me to think of the elm; but the neighbouring farmers dissuaded me much from planting this tree, saying they were sure it would not succeed, as many of them had tried it at various times, and had always been strangely disappointed in their expectations.

A neighbour of mine, moreover, took me to a field of his, where his father had, thirty-five years before, planted fifty elm-trees, much the greater part of which I found had successively died, and the nine which remained were deformed, stunted, and stopped in their growth.

This might probably have had some effect on many others; but for my part, being from my youth accustomed to examine into causes, I very deliberately proceeded in my search after the cause of this failure of success.

In the first place, from a well which I dug in my garden, I found, that immediately under the surface of the
vegetable

vegetable earth, there was a very deep bed of stiff clay; and on examining the trees above mentioned, I found that they had been planted too deep in the ground, and that their roots had been cankered by the dampness of the soil.

Having now, as I imagined, discovered the evil, I prepared for making my own plantations, intending, if possible, to avoid the misfortunes my neighbours had experienced in their attempts to plant elms.

My original design was to plant a clump of trees to the north-east, a second to the south-west of my house, and also to plant four rows of elms from the front of my house to the village, being about two hundred yards distant.

My first business in this grand affair was to lay a plan of operations: accordingly, I marked out the ground for my two clumps, and my avenue, driving a small stake in the spot where every tree was to be planted. For the avenue the stakes were placed in four rows, two on each side, thirty feet distance from stake to stake, the avenue in the middle thirty feet wide, and the rows distant twenty-four feet from each other.

My clumps I planted in triangles, one of the points being to the wind, imagining this form would best answer the intended purpose, each clump consisting of about one hundred and fifty trees. This preparation was made by me during the summer of the year 1737.

As soon as harvest was over, the same year, I hired some labourers, and made them dig a hole six feet square, and four feet deep, wherever they found a stake, throwing the earth which came out of the hole round its edges.

When this work was done, I left it in the above state all that winter and the ensuing summer, with an intent that the stiff obstinate nature of the clay should be meliorated by the powerful influences of the frosts, sun, and variable air.

At the end of the summer of 1738, I found I had not lost my labour, when I came to examine the state of my experiment. The nature of the soil, wherever the air could operate upon it, was entirely changed, the clay being much less compact, and approaching nearer to the substance of a stiff loam, being crumbly, though close in its texture.

As soon as I found that my land was thus in proper order for planting, I procured from an honest nursery man a sufficient number of young elm-trees, ordering him to mark the north side of every one of them with some white paint, previous to his taking them up.

This was a precaution some might think unnecessary; but my reason for doing it was, because I imagined that a tree, removed from its native spot, and transplanted into another place, must thrive better if, on being removed, it enjoyed the same aspects as before; and indeed some small experiments I had before made in this matter seemed to confirm me in the opinion.

As soon as I had bespoke my trees, I employed some labourers to fill up the holes above mentioned with the earth that came out of them; but I first sprinkled some slaked lime over the bottom of each hole, and mixed lime with the earth as it was thrown in, to the quantity of a bushel for each hole.

When this work was done, and the ground appeared level, with a little spare earth near each hole, I had my trees planted in the following manner.

I began planting my trees about the tenth day of October, and had finished by the latter end of the month.

I caused, in the first place, the roots to be moderately trimmed with a very sharp knife, each root being cut sloping, not transversely, the slope being undermost or next the ground: this was, in some measure, essential to prevent the moisture proceeding from rain from soaking into the wounded part.

Having proceeded thus far, I caused a tree to be set over each hole, upon the surface of the ground, round the roots of which some under-turf earth was piled, and over that the remainder of the natural soil, with which some slaked lime had been mixed.

The upper part of the little hillock, formed round the roots of the tree, was made a little hollow, to convey to the plant as much rain as would be necessary to supply it with a sufficient quantity of moisture.

I then employed the parish-sexton to secure the little mound with brambles, wattled in the same manner as are the graves in a country church-yard; my last business being

ing to apply some long stakes to each tree, by way of supporting it, till it had taken firm root.

In this manner, then, I planted the whole number of my trees; and they succeeded to a wonder, for but ten failed; and the bark of these was, on examination, found to have been injured by an ass, which broke into my ground: however, the next year I had them replaced, and the disadvantage was not great.

What is most remarkable is, that my trees stood well the memorable hard frost, without being, as far as I could find, in the least injured,

I now, gentlemen, with pleasure, view the fruits of my former labours; and I cannot find that any person, within twenty miles of me, has finer trees, that have been no longer planted.

I could, in this place, enter into a long detail, and give many reasons for my adopting this manner of planting, but I shall forbear being too troublesome to your readers; as the intelligent part of them cannot be long at a loss to know my motives.

However, as my entire silence on this head may not be so well approved of by all, I shall hereunto add a few observations; which may have their use with such of your readers as are fond of planting.

I well knew, that the only way to defend the roots of my young trees from the damp, raw under-earth, which had proved fatal to other plantations, was, to raise them above it: this I effected, by planting them on the surface of the soil; and such roots as struck downwards found a good warm bed in the earth, which had been stirred and mixed with lime: however, as the elm has naturally a spreading root, the nourishment was chiefly extracted from the upper bed of earth, the main roots being covered by only a few inches of mould, and some of them, at this time, lie quite bare and prominent above the earth.

A great deal depends on staking young trees so securely that they shall not be shaken by every gust of wind, in such a manner as to displace their roots in the earth; for by this means the fibres of the roots of such shaken trees are removed from the surfaces which should afford them nourishment;

nishment; and either the tree dies, or the mouths of the roots must again have time so to adapt themselves to the circumjacent particles of earth, as to be in a capacity of once more extracting their nourishment and food from their common mother.

The trees in my avenue do not now seem as if they were planted on the surface; for I have, to make the way hard and good, since laid many loads of gravel in the middle space, and between the trees: this, together with the trees settling a little after planting, as most trees do, has made the whole appear nearly level.

I am, GENTLEMEN,

Your humble servant,

Essex,
Nov. 12, 1764.

X. Z. Rector.

N U M B E R XXXVI.

The Enquiries for a Maker of Drill-Ploughs answered.

GENTLEMEN,

SEEING that several of your correspondents are desirous of knowing where to find a person, capable of making drill-ploughs, near London, I am glad I have it in my power to inform them, that, on applying to Mr. Stephen Wood, wheeler, at Sion-lane-end, near Brentford, Middlesex, they may be satisfied in that respect; as he has made several drill-ploughs, with brass seed-boxes, for wheat, turneps, lucerne, peas, and most sorts of grain, from four guineas to eight; without brass work, about thirty shillings.

I am, GENTLEMEN,

Your humble servant,

North of Hertfordshire,
Feb. 14, 1765.

And an old correspondent,

R. H.

N U M B E R XXXVII.

On the best Method of gelding Rams.

GENTLEMEN,

THE way to grow wise in this world is by misfortune; if we do not profit by our losses, I know of nothing that will teach us wisdom.

These

These maxims hold good in most things, but in nothing more than in the matters which appertain to husbandry and country works. It was a long time before I came into a proper method of gelding my rams: I used, like my neighbours, always to employ a common gelder, who cut and seared them; however, I observed that this not only put the animal to great pain, but was a considerable time before it healed, and the sheep or lamb always lost flesh in no slight degree.

Whilst I was musing how to improve this practice, a friend of mine, a farmer, who came accidentally to see me, out of Bedfordshire, advised me to leave off gelding my rams in the manner I had practised, and, instead of it, to have them knitted.

The method of doing this he described as follows. First take some small, yet strong, twine, not too hard twisted; add three of these together, and slightly twist them on your knee, as the shoemakers do their thread; then wax it well with shoemakers wax, and it is ready for use.

When you are thus prepared, take a proper length of this twine; tie each end of it to a short bit of stick, as thick as a walking-cane; then put it round the cod, and tying a single knot, do you take hold of one stick and draw it, whilst another man draws the other, as tight as you well both can; for on the tightness of the drawing depends the success of the operation.

The animal immediately loses all sense of feeling in the cod; the circulation of the blood thither is stopped; and if it was to be let alone, it would rot off; but this is a bad, as well as a nasty and dangerous practice, for the sheep sometimes die of the stench.

The best way is, at the end of nine days, to cut off the cod; but then you must take a great deal of care you do not cut it too close to the tying; if you do, the string may chance to slip off, and the consequence be dangerous, as by such a neglect many sheep may be lost in a season.

Many farmers, I am informed, when they knit their rams, trust to the strength of one man's arms; and this may sometimes be well enough, when your workman is strong, attentive and willing; but if he is failing in any
of

of these points, ten to one but an accident happens: I therefore always chuse to employ two men at this work.

The season I chuse is the spring of the year, though some prefer November; after the ramming season is over: I have many reasons for this preference, and, particularly, I think that the warm weather coming on, hinders them from pining, or falling off their flesh, and soon re-establishes them in their perfect health. When this operation is performed in November, and the winter is either wet or frosty, the sheep are pinched by the cold, and pine away considerably, not having that heartening food, to keep them in spirits, as they meet with in the spring of the year.

I have observed, that if the rams are not in good flesh, or have not been pretty well fed, they do not undergo this operation so well: I therefore always take care to keep them particularly well some time before, and also some time after the business is done. This is an attention by no means thrown away, for without it some miscarriages may happen, which would otherwise be avoided.

When I say I prefer knitting my rams in the spring, I mean before the hot weather comes on; as to the particular time, I am governed by the season: if it is deferred till summer, the flies will surely be troublesome.

I am, GENTLEMEN,

Your most humble servant,

Near Devizes, Wiltshire,
January 4, 1765.

S. R.



Museum Rusticum, &c.

For MARCH, 1765.

VOLUME the FOURTH.

NUMBER XXXVIII.

The Use of Broad-Wheel Waggon recommended to Farmers.

GENTLEMEN,

AMONG the many improvements which are daily making in agriculture, and the instruments and machines employed in it, that of broad-wheel waggon is far from being the least considerable, as they are equally useful to the farmer and the carrier.

Great, however, as the advantages are which attend the use of them, very few are built by farmers. I am informed that in Kent, and some other parts of England, they are coming into use; but in Suffolk and Norfolk, where there are many farms, equal, if not superior, to most in England, I know but very few used by farmers.

This is the more surprising, as the great convenience of them is evident and indubitable. Any farm that requires eight or ten horses to cultivate it, is large enough to prove, the advantages attending their use. If such a farm is situated on a great road, and within reach of a

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market-town, from whence manure may be brought, the saving by them is yet more conspicuous.

I know, within a few miles of this place, several substantial farmers, who keep from ten to twenty stout horses, and are frequently carrying corn to Ipswich, Manningtree, Colchester, and Thetford: some of them bring large quantities of manure, at leisure times, from Bury, and cart-timber, or any other work, which carpenters, or others, can employ them in; but all is performed in narrow-wheel waggons, which, in our turnpike-roads, are allowed to be drawn by only four horses.

In your *Museum Rusticum*, Vol. III. page 195, you inserted a letter of mine on manuring at a large expence, in which I quoted the instance of a farmer in the neighbourhood, who brought great quantities of manure from Bury, at the expence of eleven shillings and six-pence *per* waggon-load. The practice of this farmer (*Mr. William Cook, of Bradfield*) I shall consider in the present case.

He keeps, I think, fourteen or fifteen horses, six or eight of them stout enough for a broad-wheel waggon.

The common load of a narrow-wheel waggon is about twenty coomb of wheat, twenty-five coomb of barley, a ton and half of hay, and of manure about ninety bushels. These loads are pretty near the general practice, whether with four horses in the turnpikes, or five or six in other roads. With corn, hay, planks, &c. two men are always sent to attend each waggon, and a man and a boy when manure is the load.

I know but three farmers who use broad-wheel waggons, and only one of them to the greatest advantage:

Eight horses are always allowed to draw them, when they are nearly loaded.

None of these three farmers ever sent more than two men with them, who can manage the eight horses with nearly the same ease as five or six in a common waggon: the difference in trouble is but trifling. As to the load, the superiority will be found to be very great in favour of the broad wheels.

But

But I should premise, that when a farmer builds one of these waggons, he should, by all means, remember to have very stout hanging-boards to fix occasionally round it, projecting, about fourteen or sixteen inches from the buck, over the wheels, and the ends. When a waggon is built of a proper strength, with plenty of irons, these projecting boards enable it to hold an immense load.

I have seen but one waggon, in a farmer's hands, built on these principles; and the loads it constantly carried were really surprising.

Such an one will hold two hundred and fifty bushels of manure: let us compare the saving in this article.

Between ninety and one hundred bushels in a common waggon cost eleven shillings and six-pence; the expence of two hundred and fifty in the broad-wheel waggon is as follows:

			<i>l.</i>	<i>s.</i>	<i>d.</i>
Two hundred and fifty bushels of manure, at					
the same price as the other	—	—	0	7	6
Two men a day	—	—	0	2	0
Turnpike	—	—	0	1	0
Two bushels of oats	—	—	0	3	0
Chaff and hay	—	—	0	2	0
Use of the horses	—	—	0	8	0
			<u>1</u>	<u>3</u>	<u>6</u>

From this account it is plain that fifty bushels of manure are gained by the use of the broad wheels, clear profit, every journey, or better than five shillings, according to the cost of it the common way.

You will easily conceive how much this must amount to in a year, in those farms where very large quantities are constantly brought. The farmer I mentioned takes almost every leisure day to bring it, and has frequently two waggons at the work at the same time, losing, in this manner, half a guinea a day, for want of a broad-wheel waggon.

In eighty loads, twenty pounds are saved clear; and several farmers I know take considerably above an hundred journeys in a year.

I shall next examine the saving in a load of wheat or barley carried out in a broad-wheel waggon.

I have known such an one as I have described carry eighty coomb of corn at a time; but I will lay the load at sixty coomb. The expences of carrying out sixty coomb of wheat, or other corn, in a common waggon, are

	<i>l.</i>	<i>s.</i>	<i>d.</i>
Two men two days each journey — —	0	12	0
Their allowance for expences on the road, each time six shillings, — —	0	18	0
Three bushels of oats for six horses each time, two coomb one bushel, at six shillings, is —	0	13	6
Three fans of chaff each time, at four-pence per fan — — —	0	3	0
One hundred of hay each time, at two shillings —	0	6	0
Use of six horses at two shillings and six-pence each per journey — — —	2	5	0
	4	17	6

A common waggon brings a chaldron and half of coals, or fifty-four bushels, for which the farmers receive twelve shillings <i>per</i> chaldron: in three journeys this is four chaldron and a half to be deducted from the expences — —	2	14	0
Remains total expence on carrying out sixty coomb of corn — — —	2	3	6

The expence on one journey of a broad-wheel waggon, with eight horses, will be as follows:

	<i>l.</i>	<i>s.</i>	<i>d.</i>
Two men two days — — —	0	4	0
Their allowance — — —	0	6	0
Four bushels of oats — — —	0	6	0
Four fans of chaff — — —	0	1	4
	0	17	4
One			

l. s. d.

Brought over 0 17 4

One hundred and a half of hay (this is more than the proportion, but I give the narrow wheels fair play in every article)	—	—	0	3	0
Eight horses, at half a crown each,	—	—	1	0	0
			2	0	4

Back carriage of four chaldron and a half of coals, or one hundred and sixty-two bushels, at twelve shillings <i>per</i> chaldron	—	—	2	14	0
Expences	—	—	2	0	4
Profit on each journey, by means of back carriage,			0	13	8

Whereas, in three journeys with the common waggon, there is a loss of two pounds three shillings and six-pence, which makes two pounds seventeen shillings and two-pence profit on every journey with a broad-wheel waggon.

An important article this in a large farm, and highly worth the consideration of those farmers who use land enough to employ eight stout horses.

Let us suppose a farmer to grow an hundred and fifty acres of corn in a year, and allow eight coomb *per* acre; no high calculation, if he is one that employs himself in purchasing and bringing manure. Ten coomb an acre over his whole farm has many times been under the produce of Mr. Cook's crop, whom I mentioned above.

One hundred and fifty acres, at eight coomb *per* acre, are twelve hundred coomb, or sixty journeys with a narrow-wheel waggon in a year, which, at two pounds three shillings and six-pence loss every three journeys, amounts to forty-three pounds ten shillings *per annum*.

Twelve hundred coomb are twenty journeys with a broad-wheel waggon; and, as I have above proved, that there is two pounds seventeen shillings and two-pence profit by every journey, the twenty amount in the year to fifty-seven pounds three shillings and four-pence, or above the price of one of these waggons, in a single article in a single year.

Many

Many are the farmers which grow an infinitely greater quantity of corn than I have specified; some, doubtless, much less; but it will be an easy matter to calculate the profit on any quantity; and it will prove very great, in proportion, in all farms that employ eight, or more, horses.

The same vast superiority will be found in every article of employment to which these waggons can be put. They will carry three and four times the quantity of a common waggon of hay, straw, faggots, planks, or other pieces of timber; and in each article the proportion of gain by their use will remain the same.

If we reckon only twenty pounds in a year saved in bringing manure, the clear profit on that, and carrying out corn, amounts to seventy-seven pounds three shillings and four-pence. If we calculate the saving at one hundred pounds for every article of work in the year, I am persuaded it would not be above the truth, especially if the farmer (as some few in this neighbourhood do) carts plank, and pieces of timber, or any thing else, for hire.

I shall now enquire into the reasonableness of some objections which many farmers, I have conversed with on the subject, have started against the use of these excellent waggons.

They say a broad-wheel waggon is so huge and cumbersome a machine, that it cannot be used for any purpose in their grounds, no where but in good roads.

A very trivial reason for not having them, surely! A farmer who has eight or ten horses, in all probability, has three waggons; many that I know have four, without renting very large farms. Two waggons, with narrow wheels, are absolutely necessary for home business, and in many farms three, in some four. When no broad-wheel waggon is kept, they are built generally very strong for road-work, to a much greater price than would be necessary if they were used only at home: here would be a great saving, in having the common waggons lighter built: and as one waggon in most farms is very stout for
road-

road-business, the difference would be no considerable sum between that and a broad-wheel waggon.

I have now one with narrow wheels, which cost me twenty-seven pounds: I can build one with broad wheels for fifty, complete in every respect: the extraordinary expence therefore would be only twenty-three pounds. But to answer all doubts, I will suppose the farmer must keep the same number of common waggons, and the whole fifty pounds expended extraordinarily. Let any one of common sense judge if such a purchase would not answer, were the twenty pounds *per annum*, saved in bringing manure, the only profit arising from it. The answer is plain and evident. How much more advantageous is it then, when seventy or an hundred pounds a year is the gain by having one?

I have heard some other objections made to their use, but all so extremely trifling, that it is needless to take the trouble of answering them.

A broad-wheel waggon will go in any quarter-road, and to most towns in England, of any consideration, even where there are no turnpikes, roads good enough for these carriages, lead. But in the country, of which I more particularly speak, *viz.* the roads leading around Bury to Thetford, Ipswich, Manningtree, Colchester, Sudbury, Hadleigh, &c. &c. exceeding good roads are every where met with, and in most places better for quarter carriages than narrow-wheel waggons.

Load eight horses in a broad-wheel waggon with three times the weight which four horses will carry in a common carriage on our turnpikes, and they will perform their journey with far more ease to themselves than the others; and in other roads, where a narrow-wheel waggon is jolted, and almost racked to pieces in deep ruts, a broad-wheel waggon will carry, with ease to the horses, and not half the tear of irons, &c. three times the weight which six horses can draw in one with narrow wheels.

The breadth of the wheels gives a steadiness to the whole machine, and enables it to roll along without those violent

violent jolts which so greatly encrease the fatigue of drawing narrow wheels; and their not cutting into the ground such deep narrow ruts, must indubitably ease the draught to a great degree.

The practice of drawing with oxen, which in some counties is so general, is scarcely known here: grazing is much pursued, and would make a team of oxen answer extremely well.

In all farms that employ two teams, I am persuaded one* of oxen would answer greatly. Their food is not half so expensive as horses, the attendance on them but trifling, the weight they draw much greater, nor are they liable to so many accidents, and then the vast advantage of fattening them at last for the butcher, altogether render them the most profitable team in the world.

It will not be long before I build a broad-wheel waggon, and drive a team of oxen in it. I may then give you, with more certainty, a comparison of them with horses*.

I remain, GENTLEMEN,

Your constant reader, &c.

Bradfield, near Bury,

Y.

Feb. 7, 1765.

P. S. Errata. In my last letter, page 65, line 21, of this Volume, for "*Dr. Harte*," read "*Mr. Harte*:" and line 22, *ibid.* for "*Treatises on Husbandry*," read "*Essays on Husbandry*."

* It is always with pleasure we acknowledge ourselves obliged to this gentleman; and we have only, on this occasion, to repeat, that any future letters he may please to favour us with, will meet with a welcome reception, and the more so, as he, for the most part, writes on practical subjects. E. O. N.

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NUMBER XXXIX.

The Culture of Madder described, with a State of the Expence of cultivating one Acre, and an Account of an Experiment made in England with respect to using the green Root for the Purposes of Dying.

GENTLEMEN,

I Have been a practical grower of madder for several years, and have tried it upon lands of various kinds; and as I apprehend the cultivation of it in England is of great importance to our trade and commerce, I am willing to communicate (through your channel) the result of my experiments to the public.

My first trial was upon a small piece of ground near my house, of about forty perches of land, lying pretty low and moist, of a deep mellow soil, and rich black mold, a little inclining to sandy; and underneath about two feet and a half, and in some places three feet of good earth, was a bed of loose sand, with a mixture of gravel.

I have been the more particular in the description of the nature of this land, because it produced the best English madder I ever had, both as to quality and quantity.

In March I caused this plot to be dug a full spit deep; and as it was under natural grass for some years before, I took care in digging to throw the top turf as low as possible, turning the mold uppermost, in order to prevent the grass from springing; which had the desired effect. I also took care to pick out all the roots of weeds, and other noxious plants, which were found therein.

In this state it remained about a month; then with a line I divided it into beds of five feet wide, and two feet interval between each bed, raising them a little in the middle with some of the earth in the intervals; then with iron rakes the beds were reduced to a fine garden-mold,

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leaving them a little rounding, like asparagus beds, in order to shoot off the rain-water; and having procured some strong pack-thread, at every foot distance I tied a small piece of white woollen-yarn, and thus continued the whole length of the line, which afterwards served as a rule where to fix the plants.

This line was extended the whole length, upon the outermost bed, six inches from the side ridge of it; then with iron-shod dibbles a madder-plant was set strong in the ground, near every tuft of white yarn fixed along upon the line.

This row being thus planted, the line was removed two feet forwards, which brought it exactly to the middle of the bed: this being also finished, the line was again removed two feet, and planted as before; and this method I continued till the whole was planted. Thus there were three rows of plants in each bed, at two feet distance, and one foot apart in the rows; and the distance between the innermost row of one bed, and the outermost row of the next adjoining bed, was three feet.

During the first summer I kept the young madder quite clear from weeds by hand-hoeing, as soon as any appeared; and in October following I took the haulm, that overran the intervals, and spread it over the beds, without cutting any off; then with a spade I covered the haulm with the earth from the intervals about two inches thick.

In this condition it remained during the winter, and in March following the young madder came up very thick and strong; and as fast as any weeds appeared, I kept them down by hoeing, as before; but in the second summer I found there was no necessity of repeating the hoeing after the middle of June, for the haulm was now grown so very luxuriant as entirely covered the surface of the ground, and thereby prevented the weeds from growing; and in October I again spread the haulm upon the beds, and covered it over with the earth in the intervals, as before.

There are three good reasons for covering the madder in winter.

The

The first is the new dressing of the beds with fresh untried earth.

Secondly, by this method deep trenches are formed at proper distances throughout the whole plantation, and consequently the beds are kept dry and healthy, and thereby the roots are prevented from rotting, which otherwise they are apt to do, if the water continues too long soaking on the beds.

The third reason is still more efficacious; for by this means the haulm is entirely rotted, and the volatile salts contained therein are washed down to the roots by the winter rains, which tends more to encrease the vegetation of the plants than double the quantity of any other sort of manure whatsoever, and for this reason, because the salt, inherent in the haulm, is of the same kind with that which was before extracted out of the ground by the growing of the madder, and is now returned into the earth again, in order to renew its former office of vegetation.

This, perhaps, may seem new doctrine to most of your readers; but experience convinces me of the truth of it, not only with regard to madder, but likewise in the propagation of asparagus, which, in a future letter, I may, if I have leisure, explain more fully, by giving the public an account of my making and managing those beds*.

If this hint was duly attended to, it is my opinion that both farmers and gardeners would find their account in it, in the production of most sorts of vegetables.

But to return more immediately to my subject.

In the third summer very little work was required, only two slight hoeings in April and May, owing to the strength of the haulm, which covered the ground as in the preceding summer; and in October following the roots were taken up, and this small piece of ground produced

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* We are greatly indebted to this gentleman for the favour of his letter; and it would be encreasing the obligation if he would soon let us hear from him relative to his method of planting asparagus. E. O. R.

one thousand nine hundred and sixty-five pounds* of green roots, which were very large, and the madder, upon trial, was found to be exceeding good.

In cultivating madder, great care is to be taken to see that every set or plant has some small fibres at the root; and this ought particularly to be observed by those who are employed in taking them out of the ground; for unskilful persons, not used to the business, very often draw up such as have no fibres at all, and then they certainly miscarry.

The best way is, to remove the earth from the mother-plant with a small hand-hoe, or some such instrument; and then you may easily find which of the young plants has fibres, and which not.

In the second spring you must be cautious not to take off above two or three sets from each root; but in the third spring, when they are deeply rooted, you may take off almost as many as you please, without injury.

The sooner the young plants are set after they are taken up, the better; and if you are obliged to have them at a distance, so that they cannot be set again in less than three or four days after they are taken up, they must be well watered at first planting, and repeated, as often as you see occasion, till they have taken root.

In dry seasons, the young plants very often die for want of moisture soon after they are planted; and in large plantations the expence of watering would be too great; therefore I always get my land ready early in the spring, and wait for some showers falling; and when I find them just at hand, and sometimes in the rain, I get a great many hands, and immediately go to work, some† taking up, and

* This is seventeen hundred, two quarters, and five pounds, and, in kind, at fifteen shillings *per* hundred, (which is a low price as madder now sells) comes to thirteen pounds three shillings and two-pence, being the produce of a quarter of an acre only; which sum, multiplied by four, makes the produce of an acre fifty-two pounds twelve shillings and eight-pence.

† Women are generally employed in this work, and two men will plant as fast as six women can draw.

and others raking and planting ; so that the whole is soon finished, even in a large piece of ground ; and when the plants are well watered at first, they soon take root, and afterwards they will stand a dry summer very well.

In the most favourable seasons some few plants always die soon after they are set ; therefore, about three weeks after planting, you must go over your madder-ground, and replace such as have failed, with the best and most likely plants ; and if the season be dry, let them be well watered at first planting ; but if, after all, you find any miscarry, (which, in a dry summer, they sometimes will do) the best way is to fill up the vacancies * with winter-plants, in October following, just before you cover the haulm.

Madder may be successfully planted from the middle of March to the end of May, according as the spring is either forward or otherwise ; but if showers should happen to fall in April, this is the best month in the year for planting madder. There should be no dung of any kind laid upon the ground during the time the madder is growing, because it has been found to give the madder a bad colour ; and if the land is in good heart, and proper for the purpose, there will be no need of it.

It cannot be expected that any land, even the richest, should produce repeated crops of madder ; for which reason I am told that the Dutch always allow an interval of six or seven years, in which time they manure the land very well, and sow it with corn or garden vegetables, and have always large crops, owing to the deep stirring of the ground, and being clean from weeds ; and I can, from my own experience, assert, that the best crops of corn always succeeded a madder-crop.

About

* In September or October, when the madder is dug up for use, you may observe, near the crown of the root, several branches thick set with small buds, and some fibrous roots growing underneath : these, when cut into lengths of about three or four inches each, and planted any time during the winter, will grow very well.

N. B. They are called winter-plants, by way of distinction.

About five years ago, I planted an acre of madder on a light, dry, sandy soil, which produced a tolerable crop, but nothing equal to the other.

I likewise tried it upon an acre of land, of a loamy, mellow soil, somewhat sandy, about a foot deep in mold; and underneath is a cold, stiff clay: from this piece I had great expectations, as the plants thrived very well at first, but in the second summer, when the roots reached the clay, the plants died away, and came to nothing; therefore I am well satisfied a cold clay is by no means proper for madder.

I have also, at this time, two other acres of madder, which I intend to take up next winter; it will then have stood three summers. The soil is a deep, hazel mold, worth about twenty shillings *per* acre. Instead of digging it with the spade, I plough-trenched it at least eighteen inches deep, but managed, in all other respects, like the former. From the appearance it made last summer, I have no great expectations from this plantation, though, I fancy, it will be a saving crop.

Expences attending the Culture of an Acre of Madder, supposing the Land to be worth Forty Shillings per Acre.

	<i>l.</i>	<i>s.</i>	<i>d.</i>
Rent for three years	—	—	6 0 0
Digging <i>ditto</i> at two-pence <i>per</i> perch	—	—	1 6 8
* Dividing <i>ditto</i> into beds, two men one day, at one shilling each	—	—	0 2 0
Raking <i>ditto</i> , two men one day, at one shilling each	—	—	0 2 0
Planting <i>ditto</i> with two thousand plants, one day, at one shilling and six-pence each	—	—	0 3 0
			<hr/> 7 13 8
	Six		

* The expences in the works of husbandry and labourers wages are not the same in all parts of England. We could wish our correspondent had remembered to have informed us in what county his experiments were made: we presume, however, it was in Hampshire, as the post-mark on his letter was Ringwood. E. R.

	<i>l.</i>	<i>s.</i>	<i>d.</i>
Brought over	7	13	8
Six women to take up two thousand <i>ditto</i> , at six-pence each, one day		0	3 0
Hoeing the first summer five times		0	15 0
Covering <i>ditto</i> in autumn the first year		0	6 0
Hoeing <i>ditto</i> the second summer three times		0	9 0
Covering <i>ditto</i> in autumn the second year		0	6 0
Hoeing <i>ditto</i> the third summer twice		0	4 6
To be paid in lieu of tythe, at five shillings <i>per</i> acre <i>per annum</i> ,		0	15 0
Digging <i>ditto</i> out of the ground		5	0 0
Total of expences	15	12	2
As I always allow my people beer when they are about this business, I may add		0	6 0
Which brings the whole expence to	16	0	0

In the above account I have not reckoned any thing for the plants ; for though they cost considerably at first, yet it is then done once for all, to any person who continues to propagate madder, as he has always a constant supply from his own plantations.

	<i>l.</i>	<i>s.</i>	<i>d.</i>
Produce of an acre of madder	52	12	6
Expences	16	0	0
Clear profit	36	12	6

In the business I follow, which is that of a clothier, a great deal of madder is used in dying ; and being of opinion that there are many useful discoveries now lying dormant, only for want of proper methods to bring them to light, I determined to try an experiment on madder ; accordingly I took twenty pounds of the green root, and having washed it clean from dirt and filth, I bruised it in a large iron mortar just before using, and with other ingredients I dyed half a pack of wool of a dark, full drab : upon examining my colour, I found it full as good as
though

though I had used four pounds of the best *umbro* madder, imported from Holland; so that, according to this calculation, which is founded on experiment, five pounds of green madder-root is equal to one pound of dry manufactured madder; and as I have found this method to answer, I have continued to use the root in this condition ever since, and find it much the best and cheapest way; for the green root is bruised very easily in the mortar, and thereby saves a great expence in drying, pounding, &c.*

Before I quit this subject, I would advise those persons who are inclined to cultivate madder, to be very cautious in the choice of land for this purpose; for hereon their success chiefly depends. Madder being a plant that draws a great deal of nourishment, consequently the richest and deepest lands are to be chosen, and such as lie pretty low; for high lands are seldom fertile.

If by means of this letter any of my countrymen should be excited to a laudable attempt to cultivate this useful commodity, they will probably find the directions here laid down not only useful, but necessary, as being the result of many years experience.

I am, GENTLEMEN,

February 16,

Your humble servant,

1765.

A. CLOUTIER.

P. S. I had almost forgot to give directions for preserving the green madder-root, which is easily done by covering it over with sand, or dry earth, till you have occasion to use it; and I have reason to believe it might be secured in this state for many years, without injury, on a dry earthen floor.

Left

* For the method of using madder-root green, see our First Volume, page 401. where there is an abstract from Monsieur D'Ambourney's method; or, if the reader chuses to see an account of this method more at large, we must refer him, for a translation of Monf. D'Ambourney's Essay, to a new periodical work, called Foreign Essays on Agriculture and Arts, in the First Number of which, page 29; he will find it. E. R. O.

Left any of your readers should mistake my meaning in the above letter, I have hereunder given as plain a representation as I am able, of my manner of planting.

Intervals two feet wide.

.....
Plain Representation of the Beds after they are planted with Madder, signified by the Dots.

Beds on which the Madder is planted, five feet wide.

Intervals two feet wide.

.....
 Beds on which the Madder is planted,

Five feet wide.

Intervals two feet wide.

N U M B E R X L.

*Some Hints relative to Burnet-Grafts, lately published by Mr. Barth. Rocque, of Walham-Green *.*

AS several ancient and modern authors have treated of burnet, I shall not undertake describing it here, but ingenuously own, I know it only under the denominations of *pimpernelle* in French, and burnet in English: and I shall content myself with putting you in the right method, according to the experience I have made, of the most advantageous manner of cultivating it.

The lands which suit it best are dry.—It grows in stony and gravelly lands, and grows well in strong lands, with proviso the water does not settle upon it; for if it does, it will spoil the points of the roots.

VOL. IV. No. 19.

A a

Burnet

* See the letters on this subject, communicated to us by Mr. Rocque, in our First and Second Volumes. E. R.

Burnet will not do in new-broke-up land; the land must have been broke up a year at least before you begin to sow burnet in it. During that year, one may sow either oats, corn, peas or beans, or any sweetener; but those I have just mentioned, and potatoes especially, are the properest to season new-broke-up lands; for, when new broke up, there is a certain bitterness, that does not much suit any thing, unless it is peas or oats. It is not to be said, that no new-broke-up lands will do for burnet; for there are some will, with proviso you give them three or four good ploughings. The tiller must be experienced, to be able to judge of the nature of the ground, whether it be sweet or bitter, either by handling or smelling of it.

Those lands which have that bitterness are several years a sweetening. There are some lands one cannot dig deep in, without bringing up dead earth: where that dead earth is to be found within seven or eight inches of the surface, it would be proper to plough that ground twice over in the same place; that is, to have two ploughs to follow one another in the same track: after having thus ploughed it, when it is settled, it should be ploughed over again, in the same manner, that the earth, that was underneath before the first ploughing, may return to its center. I have dwelt upon this article, because I have experienced the necessity of following these rules.

I pulled up a root of faintfoin, that was nine feet ten inches long. I dug in a piece of strong land first, one foot deep, which proved very good: the earth of the second foot was partly the same as that of the first, but mixed with chalk, and stinking: that of the third was a blue clay, very strong, and very stinking: that of the fourth and fifth continued of that bluish earth; and that of the sixth, of a white sand: that of the seventh, eighth, and ninth, mixed of sand, and some blackish veins of earth; but the whole very bad, except the first foot.

I am convinced, that, had one taken an hundred weight of that stinking earth, and spread or strewed it upon six foot square of good ground, nothing would have
grown

grown upon it, except oats. You will ask me, how that root could grow so much in such bad land? I must tell you, that it is not the root works of itself, but the motion of the plant that forces it to seek its nurture where it can find it.—I am persuaded that the distemper amongst the cattle proceeds from nothing else but the infection of the earth. The great frosts having opened the pores, and penetrated into that corrupted part of it, the vapours that proceeded from the said corrupted part infected the pasture.

I have strayed from my subject. But, to return:

Before you sow your burnet you must, if the land be poor, manure it well, with any manure whatsoever. One may sow it in April, May, June, July, or August. It bears seed twice a year. Work your ground very fine with the harrow, and roll it.—When harrowed and rolled, sow twelve pounds of seed to an acre; when sown, harrow it with a light harrow; then roll it again. In about eight or nine days it will come out of the ground. It must be kept very clean, the first year, of all things, either by hand or hoeing: after the first year, it grows so strong, that it choaks all other grasses. There is no drought can stop its growth, nor frosts can kill it, because it is always in sap.

When the seed is ripe, it sheds of itself: one must cut it in the cool of the morning, when the dew is upon it, if one wants to save the seed. Thresh it the same or the next day: when threshed, it makes an excellent fodder: and if you leave part of the seed with it, and dry it well, you will find it will answer the same purpose when you give it your horses, as if you gave them oats with hay.

I know no grass so solid; and it is to its solidity I attribute its being so nourishing.—We have weighed it green, that is, just after mowing, against all the other pasture grasses, and it out-weighs them all, without any exception.

I sow it like lucerne, or corn: some approve sowing it in drills; I have sowed some so myself: both ways are equally good. As one cleans it but the first year, the difference is not much.

A a 2

I have

I have observed, it bears seed twice a year. It is to be cut but once the first year. The proper time for cutting the second crop is about the middle of September; a proper season for having a good crop in spring.

For ground that has been in tillage some years, there is nothing to be observed before sowing, but to get it thoroughly clean.

The seed sown in April may be mowed at the latter end of June, or the beginning of July; and either given green to the horses, or made hay of.

That sown in June will produce a pretty good crop; but you must likewise cut it but once, which must also be in the middle of September, being a proper season to cut it, to have a good crop in spring, as aforesaid.

That sown in July is not to be cut.

I have said it is to be cut but once the first year, but have not mentioned, that you must leave your grass to be rank the winter, in order to turn your cattle in, in February or March, and feed it till May. When you want to save the seed, you must feed it till May; for, if you do not feed it till then, it will be too rank, and will lodge.

An acre will produce upwards of three loads of hay, and above forty bushels of seed. I have cut six roods*, and weighed it, seed and all: it weighed eleven hundred and fifty pounds.

The horses are fonder of that seed than they are of oats; and I think it much more proper food, for those that do not work hard, than the oats, as it is not of so hot a nature.

The first crop of the burnet purges horses, as well as the strongest physic, for three days successively; then it stops: this I can ascertain. Last August, being at Lord Uxbridge's, I saw six horses that were feeding upon three acres of burnet: his lordship's man told me, they had been turned upon it three weeks and four days; that they had purged the three first days so excessively, that he thought

* We suppose Mr. Rocque means six rods, or perches, and that it was weighed green. E.

thought they would scour to death; but the purging stopped the fourth day, and they throve amazingly. When his lordship ordered the horses to be turned upon it, the bailiff told his lordship, they would eat it in three or four days time. When we came to examine the pasture, we found the burnet grew faster than the horses could eat it, though the land is but very indifferent, gravelly, and full of large stones. His lordship has sown twenty acres; and there is no doubt but it will turn greatly to his profit.

The reverend Dr. Lambe, of Ridley, near Dartford in Kent, has sown seven acres, and has told me he would not take fifty pounds a year, fourteen years together, for the said seven acres. He proposes to write a relation of it, and to present it to the society for the encouragement of arts, manufactures, and commerce.

John Lewis, Esq; of Tracey, near Honiton in Devon, has sown six acres, and repents he did not sow twenty: but he has left numbers of acres fallow, to sow some in next year.

I could produce many more instances of the approbation of burnet, but think the above sufficient.

N U M B E R X L I.

Some Hints on Timothy-Grass, by Mr. Rocque.

TIMOTHY-GRASS requires strong land, and does amazingly well in marshy ground: as to the last, one can work that only in dry weather; and, as there are some marshes in which cattle sink, in the greatest droughts, one must work them with a spade: and, for fear of bad weather, sow the seed at the same time you work the ground. It must not be sowed very deep. When sowed, run a light harrow over it. In marshy ground one must seize every opportunity of sowing it, without subjecting one's self to seasons. You must sow four pounds to an acre, both in marshy, and strong dry land; one may sow it, in the last, from February till September or October. It is not necessary to sow wheat amongst it, as one does amongst

amongst other pasture, because it grows, the first year, like a corn-field. Horses and cows prefer it to all other pasture. In America, those that put their horses to grass, make their bargain with the farmers, that they shall be fed with nothing else but timothy. It grows also in Russia. General Keith told one of our grandees, that, commanding the troops in Russia, he had been obliged to send the cavalry before the infantry, to beat it down, otherwise the infantry could never have got through it.

To make hay of it.—It must be cut as soon as it is in ears, because it is a strong grass, and somewhat difficult to make hay of in bad weather. If you have bad weather, making the hay, and that it is washed with the rain, you must stay till it is dry weather; then dry it well, and put it in ricks; and, when very dry, put a layer of salt between each bed of hay, as before directed*.

When to save seed.—One ought not to cut it but when the seed is ripe, which is partly the same time as corn is. One may cut it in May, while it is young; but, if one does cut it then, the crop of seed will not be so large; and, moreover, the seed will ripen later; then, wet rainy weather coming on it, when it ripens so late, it will not do so well. Timothy produces a very great crop, and is one of the most excellent grasses; for, in marshes where horses can scarcely pass, it grows so strong, that it can bear a cart or waggon. I have sowed some in my ground, in September, October, and November; and, as soon as it was out of the ground, it lay under water, and remained so for four months and a half, yet still retained its verdure, even under water; but that I had sowed in September and October, throve better than that sowed in November.

* Mr. Rocque here alludes to a method recommended to him by the Hon. Mr. Allen, who has frequently practised it with great success in America. For a description of this method, by the above gentleman, see our Second Volume, p. 279. E. N. O.

NUMBER XLII.

A new Method of improving Land, by Mr. Rocque.

SOW no corn without a crop of grafs-seed : amongst your wheat you are only to sow rye-grafs, unless you can meet with some good hay-seed, which will answer the purpose much better. If your grafs-seed should not come up so well as you could wish it, you will sow in the month of March, and in dry weather, if possible, six pounds of clover-seed *per* acre : be not afraid to harrow and roll it well, which will not be in the least hurtful to your wheat.

This crop of grafs will always keep your land clean, and produce good food for your sheep. Your corn being cut down, let the grafs take head for about the space of a fortnight, or three weeks, before you turn your sheep upon it ; then continue feeding upon this ground till the season for sowing your spring corn ; which you are to sow in the same manner as the former, that your land may be always covered with good grafs, instead of weeds.

I recommend the rye-grafs, as being forward : nevertheless I am not a friend to it, on account of its being a coarse grafs ; I am afraid it will draw the land too much. We have a far better grafs, under the name of po-grafs, which is also very forward ; but you are to make use of the rye-grafs till such time as you have a sufficient quantity of this po-grafs.

Amongst your spring corn you may have a mixture of all kinds of grafs, *viz.* purple and white clover, perennial clover, trefoil, &c. when, as soon as your corn is down, a fine turf presents itself to your view. But as this method will consume a large quantity of grafs-seeds, you may sow some of your fields with separate grafs, in order to keep your seed clean ; and by this means you will be able to judge which grafs is most suitable to your land.

When

When you are about to sow your spring corn, give that field which was wheat the precedent year, but one ploughing, if light land ; but if strong land, you are to plough it two or three times, according as your own judgment guides you.

Your land being in order to receive your seed, if you sow forward, let a bushel and a half of barley suffice for an acre, upon condition that your land is pretty good ; otherwise two bushels. Also, if you sow late, make use of two bushels upon an acre, for this reason, that the corn will not branch, nor yield, so well as if sown forward. As my aim is to preserve your land from filth, as well as to keep it continually cropped, when you save your purple clover-seed, you are to save it from the second cut ; after which put the plough to work, and get your land in order for what you think proper : whereas, if you leave it for the second year, your land will get foul.

What has thus far been said, is chiefly in regard to your feeding of sheep. For all other cattle, as bullocks, horses, and cows, I recommend the lucerne to be sown in all your deep lands. One acre of lucerne will produce more fodder than three acres of any other grass, and is the richest of all that have reached our knowledge. It will fatten a bullock better, in five weeks, than the best fodder you can have of any other kind will in two months. A cow will yield near a double quantity of milk ; a horse will get fat, in his work, with half the usual allowance of corn. Again, this fodder is so rich, that the horses do not eat near the quantity of it as they do of common hay. It will be proper to mow your lucerne the day before you give it to your cattle.

It has been reported by some, that the lucerne will not make good hay ; but that I impute to their want of experience. I make hay of it every year, and look upon it as the best of all hay ; for feeding of all kinds of cattle. Doubtless, if the weather prove bad, all hay will receive damage, little or much ; yet I do not perceive but that the lucerne will preserve itself as well as any other hay.

As

As this lucerne produces so great a quantity of fodder, it consequently will produce as great a quantity of manure.

The place where you intend to fodder your cattle must be made upon a descent, of a considerable depth, in order that the staling of them may not waste in its course; at the end of which you are to have a cistern made of clay, to receive all the droppings of your cattle. If you can shelter this yard from the rains, one gallon of the water from the cattle will be as serviceable as five gallons of the other, where your yard is not sheltered. The water which comes from your cattle, especially the horses, is of very small service to the land; but when fermented together in the cistern, it will gain much spirit and strength. The Dutch and Flandricans carry this water in waggons with a sail-cloth; and when their corn is sown, they sprinkle their land with it, especially their rapé, which they never transplant without sprinkling of it with this water, if they have it, which serves for one year's manuring.

What I have said here, is but to give you a hint; but when you come to try the experiment, you may possibly know how to manage better than I am able to tell you. Undoubtedly the farmers will think the charges of this seed too great: but let them balance the profit that will proceed from it, with the expence, and they will certainly find it will redound very much to their advantage. The first profit will be their saving half the usual quantity of corn, and having better crops: secondly, they will have pasture for four times the number of sheep, and their ground will be kept clean: then, by feeding four times the number of sheep, they will consequently have four times the quantity of wool. By this means meat will be cheaper, and you will be able to sell your cloth at a lower price in the foreign markets: you will then have no need either of carrots or turneps; and your fallow fields will be turned into profitable pastures: and, as your grass is always young, your food for your cattle will certainly be

sweeter ; consequently your meat will be the richer, and butter and cheese abundantly the better.

The bird-grass is a new grass to us ; but, in my opinion, it will prove the finest we have. It grows in quite a different manner to any other grass : it is very short jointed, and every joint that touches the ground, strikes root ; and branches shoot from every joint that is above the ground. When this grass is in a condition for mowing, if you keep it for a month, it will still remain green ; neither doth it rot like other common grass. It grows to the height of between two and three feet, and admirably thick. If you can keep it clean, it will produce a great crop the first year : but the cleaning of it will be so chargeable, that I am afraid you will be obliged to sow it among your corn, in order to keep it clean. I have sown, this last Michaelmas, an acre of it ; so that, by next year, I may possibly be able to give you a better description.

There is a grass, that I received from Mr. Small, under the name of the orchard-grass, which seems to be very coarse, but very sweet, and of great growth. It is a grass which I have heretofore seen in the fields.

We have already found out several sorts of grass, to crop all kinds of land. The most dry, barren, sandy lands will bear the burnet. It will be proper to plough the land, which you propose for your burnet, in the spring, and sow your seed in the month of August ; because then the nights grow long and colder ; and as this burnet grows all the winter, it will take good hold in the ground. If you sow it in the spring, and the weather should prove dry, it may probably destroy it.

In all your wet, sour lands, you may sow timothy, which will make a strong bottom, and produce great crops. As for what has been said against the timothy, you need not regard ; because they that have said it, have talked without experience ; but all our knowledge comes by experience.

NUMBER XLIII.

An Enquiry respecting the Culture and Management of White-Dutch Clover.

GENTLEMEN,

AS a constant reader of your work, and well wisher of your undertaking, I request to be informed by you, or some of your correspondents, of the management and culture, and the nature of the soil which best agrees to produce a good crop of Dutch white clover*, as I hear some

B b 2 improvements

* We are always willing to oblige our correspondents, when it is in our power.

The white Dutch clover is reckoned the sweetest feed of any of the sown grasses; and it is of most advantage to the farmer, because it is perennial, or lasts a great number of years on the land.

This plant sends forth roots at every joint, so that it thickens, and soon makes a thick sward. When land is to be laid down for pasture, the farmer will reap great profit, if, with about four bushels of clean-sifted hay-seed to an acre, he sows eight pounds of this clover; but it is to be remarked, that it is never to be sown with corn.

It may be sown either in spring or autumn; if in spring, it may be cut about the latter end of July; if sown in autumn, the crop will be much earlier. As soon as ever the hay is off the land, it should be rolled with a heavy roller. In laying down land with these grasses, it will be proper for the farmer to be very careful that he cleans the land of all sorts of weeds; and the hay-seeds are to be sown first, immediately after which the clover is to be regularly scattered. After sowing, the land should be lightly harrowed, with a short-tined harrow, to bury the seed; and a few days afterwards, if the weather is dry, it should be rolled, to break the clods, and close it.

It will be good husbandry, if, after the plants are come up, the farmer should send in some weeders, to pull up all the tall rampant weeds which might injure the crop, for, if they are suffered to feed, they will soon stock the land.

It will be proper to take the advantage of dry weather, and roll the land three or four times, after the plants have attained some size; for the clover, as is already observed, taking root at every joint, the sward will thereby be greatly thickened.

If

improvements have been made in this respect about London, and none of the kind in the west of England.

I should be greatly obliged to you to insert an account of the same, as soon as convenient, in your monthly publications on husbandry; and I will not fail acquainting you with any thing that comes to my knowledge in the affair, if not in your work. Please to insert this letter, or send a few lines to me, addressed to the care of Mr. Robert Haydon, of Plymouth, Devon.

From a young farmer,

And well-wisher of your undertaking,

February 4,

R. G.

1765.

If a farmer knows his own interest, he will sow some of this white clover seed by itself, in order to supply himself with what seed he may want, for it is sometimes very dear. The best season for sowing is autumn, upon dry lands, about the beginning or middle of September; but in open, cold lands, much exposed, a month sooner is better: all the caution required in this autumnal sowing is, to let the land be very well rolled in the month of October, before the frosts come on, and again in March.

We are indebted for the above account to a gentleman who is a great friend to our work, and who drew it up, at our request, for the satisfaction of our correspondent.

The above method is that which is practised round the metropolis, in Middlesex, and the neighbouring counties; yet, as practices differ in various parts, we should be particularly obliged to the Reverend Mr. Comber if he would, provided it is not too much trouble to him, procure us a description of the method of culture followed, with respect to this plant, by the clergyman in the west-riding of Yorkshire, who saved, the year before last, as much seed, from one clove, (the size not mentioned) as fetched him forty pounds. (See page 124. of this Volume.)

Before we conclude this note, we must observe, that the white clover will thrive on almost any soil, from the lightest sandy loam to the strongest clay; but it succeeds best on a crumbly loam, with some mixture of sand; and if the farmer spreads on it, once in three years, some very rotten dung, it will much more than repay him any expence he will by this means incur. E.

NUMBER XLIV.

Some pertinent Queries respecting the Management of a Farm in the North of England, by a Gentleman of Fortune.

GENTLEMEN,

I Am a man of some education, some fortune, and some knowledge of the world; of the world, I mean, as it is acted in great towns, being born, and having lived all my time, in one of the largest cities in this kingdom. It was, however, my fate, a few years ago, to be thrown into a village in the northern part of the most northern county in England.

As this was a situation extremely different from any I had ever been in before, and as it was entirely destitute of the many amusements with which my leisure hours had been always entertained, I found it very irksome, not to say absolutely insupportable. Reflecting, however, that there was no likelihood of any alteration, and that I was doomed to spend the rest of my days, in all probability, in this very place, I began, as much as I could, to make a virtue of necessity, and consider how I could make most agreeable the company with whom I was likely to spend the greatest part of my time.

To this end I began to interest myself in country affairs, and to make myself as knowing, as my ignorance would let me, in all the methods of husbandry practised in the neighbourhood.

In this, you will readily believe, I met with many mortifications from those, whom, a few years ago, in many particulars, I reckoned not much superior to the brutes they fed, and yet from whom I was now obliged to ask instruction.

I called in also to my aid all the modern books that have been published on husbandry; and as I found this a very rational entertainment, I pursued it with the utmost assiduity and attention. But when I endeavoured to avail myself

myself of my reading, I was answered, "*Pish! what know schoolards of these things? Let any of 'em take a farm among us, and we shall soon see what it will come to.*"

This, you may be sure, did not at all convince me, that a man's being able to read, was a reason why he should never have common sense; but as I found it the standing argument of the country, I have struck a bold stroke, and taken a farm.

Now, as the *Museum Rusticum*, amongst other books, has brought me into this scrape, I desire, by means of the *Museum Rusticum*, to be helped out of it again.

I have been somewhat particular in relating my situation, to convince you, that it will neither be agreeable to me, nor suitable to the genius of this neighbourhood, to enter into any great, hazardous, or expensive innovations; indeed, neither my leisure, nor the extent of my farm, will bear it, being only twenty pounds a year.

It consists of two pastures, the one about twelve, the other about eight acres, and four or five meadow closes: but, though my pastures are perfectly dry, and lie upon an easy descent to the south, yet I am obliged to allow three acres to summer a cow, and as many of meadow for hay during winter.

My meadow lies at the bottom of my pasture, is strong land, and appears to want nothing but manure. In order to remedy this, I can have lime, or I can burn a kiln of peat-ashes, as recommended in one of your Numbers; but I know not how to use either upon grass.

The largest pasture was ploughed, about thirty years ago, as long, by appearance, as it would grow any corn, and then left, as is commonly the case here, to grow grass, or weeds, as it spontaneously pleased; the consequence of which is, that it will neither *skin* nor *tallow*, or, in other words, is fit for nothing but young stock*.

The

* We are much obliged to this gentleman for his letter, and shall esteem it as a favour, if some of our practical readers would give him the information he requires.

The

The soil is deep enough, inclinable to gravel; but so are the pastures on each hand; and yet one half the quantity is sufficient to summer a cow in them, that is required in mine. As it is gravelly, but not shallow, I desire to know whether I should pare and burn, or rive it, in what manner I am to crop it, and how many crops I am to take off, as my chief view is to get it into grass again, as soon as I can do it to the best advantage*.

I can have lime at a moderate price, but it is rather sandy than oily, and no other manure is to be had; so that this lime, such as it is, will be all the assistance I can have till the land itself affords me straw.

The other pasture lies in the same manner, being only parted by an hedge, yet, not having been ploughed so lately, is twice as good, but is so full of ant-hills, and lies so unseemly since it was last ploughed, that if I have any success in the other, I am determined to work this a little, when I have got the other laid to grass again.

This is as full and plain a description of my situation as I am able to give; and I request, you will invite some practical

The farmer will always find it turn out to his advantage if he lays down his land in good heart; but the misfortune is, farmers seldom chuse to lay down their land till they have cropped the heart of it out; and when it is laid down, their landlords will sometimes prevent them from breaking it up, though it is hide-bound, mossy, and scarcely yields any return of grass.

Our correspondent informs us, he is a reader of all the modern books of husbandry: we suppose therefore, that he is, of course, possessed of Mons. Du Hamel's Elements of Agriculture, a translation of which has been lately published. We recommend to his attention a plough with three coulters, but no share, which he will find represented in Vol. II. plate III. fig. 1. Such a plough would cost but a trifle making; and we have great reason to imagine that, if our correspondent would use it on his meadow, for no other purpose but to cut and divide the turf, and loosen the surface by one ploughing and a cross-ploughing, he would find great advantages result from it, as the manure would have a more speedy and a better effect, and the loosened surface would furnish the plants with a fresh stock of nourishment. E.

* We should be much obliged to any of our correspondents who would give this gentleman satisfactory answers, founded on experimental knowledge, to his queries. E.

practical farmer to give me his opinion in what manner I shall proceed, as I believe the changing the whole face of this neighbourhood will depend on my good or ill success: I would not therefore willingly fail, and am too ignorant of practical husbandry to attempt any thing without advice; and that advice is not to be had here.

I incline to grafs, and plough only to get a good pasture as soon as possible. Indeed I think my land too light to bear wheat, at least for any long course of tillage; though, perhaps, I might have a crop or two by sowing old wheat, as recommended by one of your correspondents; or, I believe, eating it down with sheep in winter may answer the end as well.

It is only a few years, I hope, that I shall be obliged to use the plough at all, and desire that no one will despise my *littleness* so much as to refuse his advice; for, though my farm is too small to make a fortune, which I want not, yet it is large enough to put this neighbourhood into a proper course of management, if one can be pointed out to me that will repay the expence.

Whilst I am upon the subject of expence, let me ask how often, in a year, a farmer ought to make his rent? Some say twice, some say more. Give me leave therefore, gentlemen, by your means, to invite some practical correspondent to give me his sentiments and advice in such things, as, from this account, he finds I may stand in need of; I say practical correspondent, because my theory is a little in disgrace, from the following circumstance.

Walking, four or five years ago, through a field in which a neighbour of mine was setting a gate-sloop, I thought the soil he threw out was good, though the field itself produced little or no grafs.

Upon enquiry, I found it had been injudiciously ploughed about twenty years before; by which means the best earth was turned down, and the bad thrown up; and, as only two crops were taken, it was left in this state to grow grafs.

I prevailed with him to pare an acre, and lead the fods into an heap, to work his land as well as he could with lime, the only manure he could procure, and then

then sow it down in the usual manner with grass-seeds. He followed my directions, and mixed his sod-heap in the mean time with lime, turned it two or three times over, and made it tolerably fine, and then took the opportunity of a frost to lead it on to his new-laid grass-land; but, O grief of griefs! naught my most sanguine expectations, the field by no means answers, without my being able to account for the failure*.

Sometimes I am tempted to think that the lime and earth laid on the top, instead of falling or melting when rain came, run to a kind of mortar, and have made a sod or turf as tough as before †.

Upon this supposition, I had better success with the next acre, which was managed exactly in the same manner, except that, instead of laying the lime and earth upon the grass, it was spread, after the turneps were eat off, upon the land, and ploughed in, then ploughed up again, sown with barley, and run over with a light harrow; then the grass-seeds were sown, run over with an harrow wattled with thorns; and this piece answers to admiration.

As this trial has succeeded to my wish, I am persuaded that lime may, by one means or other, be made a proper manure either for grass or corn. I am taught, by one of your late Numbers, how to apply it to winter-corn, and should be glad to be instructed further how to apply it to spring-corn and grass. I have a very high notion of top-

VOL. IV. No. 19.

C c

dressings,

* The under stratum of earth, or dead earth as it is called by some farmers, has qualities in it that are often pernicious; yet may these qualities be improved by the influence of the sun, air, and frost, the surfaces of the earthy particles being alternately exposed by frequent ploughings. If therefore this earth should, at any time, be turned up by a farmer, (and he may partly know it by the smell, as well as by its appearance) we would advise him to give his land a complete fallow, and sow it with several crops of corn, before he attempts laying it down to grass; taking care also to dress it, from time to time, with some sweet manure; and lime possesses this last-mentioned quality in an eminent degree. E.

† This might possibly be the case, owing to the land not being sufficiently ploughed after the manure was laid on. E.

dressings, and think they may, under proper restrictions, be used to great advantage*.

My letter, I find, is swelled already too long even to admit of an apology; but, as some parts of it, I imagine, fall in with your laudable design of instructing those desirous of information, be pleased to retrench what is superfluous, and propose to the public, in what manner you think proper, such pertinent questions only as may best answer my end and your design. This, I hope, will be of the utmost use to a whole neighbourhood, as well as to,

GENTLEMEN,

Your most humble servant,

Newcastle,

J. SCOTT.

February 4, 1765.

N U M B E R XLV.

Some Regulations proper to be made in order to reduce the present unnatural high Price of Provisions.

GENTLEMEN,

AS the high price of provisions, and the hardships which the poor suffer upon that account, have been the common topic of conversation of late; and as many things have been wrote in the public papers, none of which, in my opinion, strike at the root of the evil; I therefore take the liberty of offering the following considerations to the public, through the channel of your *Museum Rusticum*, if you think they deserve a place in that valuable collection.

The common cry has been against engrossers and forestallers; but they alone could never bring provisions to the present high price, for these plain reasons.

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*As top-dressings generally consist of hot manures, the principal danger is that of burning the crop; yet this danger vanishes, either by some rain falling within a few days after the manure is spread, or by mixing it, previous to the spreading, with some ingredient which may, as it were, sheathe its points for a time. E.

All sorts of meat and butter must be sold when they are fit for market, and barley is always made into malt in the same year in which it grows; therefore the only provisions that can be engrossed are wheat and cheese: no engrosser can expect that they will pay for keeping when they bear so high a price as they do at present; for it is visible, to any one who rides about the country, that there is no scarcity of wheat, and, perhaps, there is as little of cheese.

Now, the principal engrossers of wheat are the occupiers of large farms, who, by having such great quantities of all sorts of grain, are thereby enabled to keep their wheat till it sells at a high price; but these sort of people, instead of doing harm, are really of very great benefit to the nation, as it is by their means that the markets are now better supplied with grain than when it sells at a low price.

Some are of opinion, that enclosures advance the price of grain, because a great deal of land, that used to be in tillage, is now laid down to pasture; but all sorts of meat, butter, and cheese, have considerably advanced in price of late years, since so many enclosures have been made; and as these commodities arise chiefly from enclosed lands, therefore, if this was the cause, they ought to decrease in price in the same proportion as enclosures encrease; but we find it to be otherwise; so that enclosures are not the cause of the present high price of provisions: moreover, by enclosing, and thereby properly cultivating, even the very worst of heath may be brought to bear good crops of grain; an instance of which may be seen in an old enclosure belonging to his grace the Duke of Bedford, near Brickhill Heath, which, by being long neglected, was over-run with ling, and was full in as bad condition as the adjoining heath, but now, by good management, produces very good crops of grain.

The true cause of the high price of provisions, I think, proceeds from the vast increase of our home manufactures of late years; the natural consequence of which is the proportional encrease of inhabitants, and the very large extent

of foreign trade, which requires a great many more ships to be victualled out now than formerly; and the high price of grain, and cheese in particular, I take to be chiefly owing to the large demand for these commodities in foreign markets.

Now, it is generally observed, that England produces as much grain in one good year, as the home-consumption amounts to in seven*; for which reason grain is now become a great and good trade of the nation; and, as such, good policy requires that every possible encouragement should be given to agriculture: enclosing is the greatest encouragement that can be given, because it extends and improves agriculture; two advantages it never can obtain in common fields.

On this view of encouragement it was that a bounty of five shillings *per* quarter was given to the exporters of wheat, when the price did not exceed forty-eight shillings *per* quarter; three shillings and six-pence for rye, when it did not exceed thirty-two shillings *per* quarter; and two shillings and six-pence for barley and malt, when they did not exceed twenty-four shillings *per* quarter, *per* 1 William and Mary, chap. 12. This was wisely done at that time, as the trade of grain was then in its infancy; for trade must always be coulted, but never will be forced: accordingly it had its effect: but now we are got into the track, it is worse than needless to continue the bounty; needless, because the foreign markets will always take off our grain whenever they want it, and the exporters will always carry it when there is a demand for it; and it is the opinion of some, conversant in that trade, that there would not be a quarter less exported, though no bounty was to be allowed; therefore the bounty is needless.

It

* We are apt to think our correspondent's calculation is rather too large: perhaps it would have been more exact had he said, that the annual growth of corn in England is to the annual home-consumption as three to one; but even then it may be necessary to confine the consumption to what is expended in food by the inhabitants, without comprehending what is consumed in various manufactures, &c. E. R.

It is also worse than needlets, because it is raising the price of wheat seven-pence half-penny *per* bushel upon the home-consumption, and sinking it so much to foreigners*.

Now, as eight-pence *per* day is the common wages for a labourer in many countries, this bounty amounts to near one day's wages in every bushel of wheat that a poor family eats, which, upon a moderate computation, must be one bushel *per* week, as the poor eat little or nothing else but bread.

The bounty upon wheat alone, as a correspondent of your's observes, page 293, Vol. II. amounts to forty-two thousand one hundred and eighty-four pounds six shillings *ann. ann.* which, at five shillings *per* week, for a common labourer, would maintain three thousand two hundred and forty-five families; but, as I find in the excellent history of agriculture, page 48. of this Volume, the bounty paid for exporting all sorts of grain in the year 1750, amounted to three hundred and twenty-five thousand four hundred and five pounds, which, at five shillings *per* week, would maintain twenty-five thousand and thirty-one poor families: to this add the draw-back of excise upon malt, and it will appear an immense tax upon our own people, which foreigners, who are under a necessity of taking off large quantities of these commodities, are excused from paying.

Another evil attending the home-trade of corn, is the use of the large measure, which they have in many markets: nay, in all country markets, it is above standard; in some it is nine gallons to the bushel, notwithstanding the statute of 6. Car. I. cap. 19. where all measures are directed to be according to the Winchester bushel of eight gallons; defaulters liable to a penalty of five shillings, to be levied by distress. This is continued *per* 22 and 23 Car. II. cap. 12. with the additional penalty of forfeiting the corn
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* We are inclined to think, that if the bounty was limited to be paid when wheat was under forty shillings, instead of forty-eight shillings, it would be of public benefit. E.

so sold by false measure. This is likewise enforced by subsequent statutes; but, as the prosecution upon these acts is left to common informers, nothing is done in this case: it is the same in all cases where liberty is given to any person to inform, but nobody is particularly obliged to inform as his own proper and positive duty; for what is every body's business is never done; and the name of a common informer is odious, and therefore no person of character chuses to do it, though it is ever so much for the good of the public.

This large measure is a very heavy evil, because mealmen and bakers buy by the great measure, and sell their flour and bread by the standard; so that, for every quarter that they buy, they have one bushel for nothing, because they sell it again to the consumers at the exorbitant price of the great bushel.

This evil arose from gentlemen farmers, who send their servants to market to sell all their grain, who, thinking to please their masters by selling at the best market-price, put up an extraordinary measure: the mealmen, &c. take hold of this opportunity to bring all to the same measure; so that the evil is continually encreasing, and a bushel, that was good measure twenty years ago, will not hold out now.

To remove the evil, let all grain be sold by weight, except malt, which must be sold by measure, because the better it is made, the lighter it weighs.

Let the clerk of every market provide weights and scales, which he will do for a small fee; and let all be weighed by him and his deputies; and if the grain exceeds one pound in a sack above the standard, let the overplus be forfeited to the clerk of the market; for, was the whole sack to be forfeited, it would be too large a penalty, and for that reason would never be taken: this is evident in many other instances, where small penalties will keep people from offending, but large ones will not.

Foretallers certainly raise the price of markets a little, therefore should be suppressed. At present all dealers in
grain

grain, in one sense, are forestallers; for surely buying by sample should come under that denomination. The farmer carries a handful of grain in his purse, and contracts at market for a large quantity, little of which, perhaps, at that time is threshed. If he cannot sell to his mind, he is at no charges of bringing it to market, and therefore keeps it till he likes the price: besides, there is another evil attending this method of selling by sample, and that is this; the farmer will throw a few bushels into a waggon-load of grain, that the mealman, baker, or maltster, may say that he gives so much *per* quarter, that he may have an opportunity of raising his flour, bread, or malt, to a price accordingly.

I know this is a common practice; but is it not an abominable cheat upon the consumer?

Therefore let all grain be brought to market, let all be weighed *per* standard, and these evils will be removed.

I have one observation more to make, and that is this: if public granaries were established all over the nation, in small districts, upon such a plan as those at Bern in Switzerland, as mentioned in your Second Volume, page 63, the poor might be supplied from them when grain was dear, and the little farmer might find a sure market when it was cheap.

The bounty allowed for exportation would build and fill those granaries, so that the nation would be put to no extraordinary expence on that account. Thus might the poor be prevented from starving in the midst of plenty, which now is, and, according to the present system, too frequently must be, the case.

I am, GENTLEMEN,

Your most obedient,

Humble servant,

Near Fenny-Stratford, Bucks,

J. L.

February 21, 1765.

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N U M B E R XLVI.

Examination of the Estimate inserted in the Third Volume of this Work, Numb. LXXIV.

GENTLEMEN,

ON perusing the letter, Numb. LXXIV. in your Third Volume, signed Y, respecting the profits arising from the different manner of occupying land, I observed some articles brought to the profit of the feeding-account, which I cannot reconcile, and therefore would desire your correspondent to set me to rights (if I am wrong) respecting it, as an error can be of no advantage to any one.

I observe, in every year's account of produce, all the hay, which appears to be mowed in each year, is sold; therefore I should be glad to know what the cows were foddered with in winter, and on how much of the twenty acres such fodder grew.

I also observe the clear profit accruing from a cow to be valued at four pounds *per annum*; in which I apprehend all that came from her to be included, except now and then a calf, as is noticed. If this be the case, (as nothing appears to the contrary) it would also be satisfactory to know with what part of the produce of the twenty acres of land the pigs were fed, as I suppose there was no corn on it of spontaneous growth, and it is apprehended, that grass alone is not sufficient for hogs to thrive on.

The clearing up these matters may be of some consequence to us dairy-farmers, as they appear to be considerable articles in the annual produce, and from which the profits attending the nine years productions of the twenty acres in question are, I apprehend, more than half increased.

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If the estimate, referred to, be verified, I will venture to say, on behalf of myself and several of my acquaintance, that such profit is greater than any which has been made in these parts, and therefore should think the public and ourselves greatly indebted to the editors, could a particular detail of the manner of proceeding in the management of the cows and hogs be obtained of the author of that letter, so as to oblige us with it in some future Number of your *Museum Rusticum* *.

For my own part, I have been in a dairy of from forty to sixty cows and upwards, near thirty years, and, having diligently observed the produce, could never yet find that two pounds *per cow* could be netted *per annum*, and the pigs included.

It is customary for many dairies to be rented by the cow, from three pounds to four pounds *per cow per annum*, by dairy farmers; but then the proprietor of the cows finds houses for the tenant, and food for the cattle, both summer and winter.

The clearing up this point will be of the greater importance, as some persons, who may see the said estimate, may implicitly believe it to be exactly calculated, and in future leases to their tenants prevent the continuing so much land to corn; which will tend to much national disadvantage, as agriculture is, and ever will be, that art on which the greatest dependance is, and from which the most staple commodities must proceed, to wit, corn and wool. I am,

A well-wisher to all improvements,

RURICOLA GLOCESTRIS.

L.

* We should esteem it as a particular favour if our good correspondent Y. would give the satisfaction above required, as, in such an estimate, every thing should be quite clear. E.

NUMBER XLVII.

Observations on Stabbing hoked Cattle.

GENTLEMEN,

PERHAPS it may be thought unnecessary to publish the following observations on the subject of stabbing beasts (hoked) swelled by eating food much abounding with alkaline salt; inasmuch as two practical correspondents in their letters, Numb. LIII. and Numb. XC. Vol. III. have already given accounts of the method which proved successful with each of them; and a third, in Numb. LXVI. a method which proved successful to him on a calf in a similar manner affected, but from a different cause; and Numb. LXXIX. in the first paragraph, declares an ability in its author to transmit a satisfactory relation of what is practised in his neighbourhood, with constant success, very frequently: but, on further perusal, no satisfactory account is, in my opinion, found of the manner of operation.

Apprehending myself, in some degree, under an obligation to the public, in consequence of what I proposed in Numb. LVII. I think there is yet room left for me to say a little of my practice and observations thereon. As tracing effects from causes is a likely means to lead to the cure of most diseases, I would therefore first premise a few hints on what I suppose the cause of this, often fatal, disorder in cattle.

I have observed above, that I apprehend it proceeds from the abounding of alkaline salt in the food; and this I was led to believe from the tendency such salt has to promote a putrid fermentation, where it is not overpowered by some acid; which is obviously the case in the disease before us, those vegetables greatly abounding therewith, (which commonly cause this complaint) and are thereby rendered more liable to rot, when confined in a
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close warm place, (as the stomach of the beast) if not duly mixed with a sufficient quantity of acid to correct them; and which the beast, when it first has an opportunity to feed thereon, does not properly supply, because of its voracious feeding; and which defect would be supplied in the second chewing, (or what is called chewing the cud) would the nature of the vegetable, in such manner taken, admit its remaining without fermentation so long.

Perhaps this may be looked on as foreign to the purpose, if true in itself: but, as it is my opinion, grounded on observation, and may give a hint to some more observant person, for the better understanding this disease, I was willing to communicate my sentiments.

I observed, that the air, which is let out through the (puncture) hole made in stabbing a hived beast, being received in wool, and suffered to remain till cold, had a very (foetid) stinking smell; but the cud of a healthy beast, if taken from the mouth, and exposed to the air till cold, had an (acid) sour, inclining to a sweetish smell; and as both come from the (stomach) belly of the beasts, I was induced to form the foregoing conclusions.

Hence also, I think, it is easily accounted for, why beasts are more liable to swell, when the clover is wetted with dews or rain, than when it is dry; this water abounding with alkaline salt, and the quantity therein, and in the luxuriant vegetable, over-powering the acid salt in the (*saliva*) moisture of the mouth of the beast, which cannot mix with the food in due proportion in the first chewing, so as to preserve it from putrefaction; but when food which is dry, or of a nature less luxuriant, is taken, and in small quantities, the *saliva* mixes therewith in the operation of first chewing, sufficient to keep it from putrefying; and in the second chewing, more is added to the food, which, by this operation, and the digestive quality of the *saliva*, becomes sufficiently small to pass the (valves) flaps of the (farthing bag) second stomach: hence I conclude, that if a quantity of acid, as vinegar,

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or

or verjuice, with common salt, be given to a beast, when found beginning to swell, it would be likely to prevent its further progress; but this I have not tried; no opportunity having presented since my forming the foregoing conclusion.

As stabbing cattle in this disease is in itself a violent and hazardous operation, I could wish something, by way of medicine, could be discovered effectual for a cure; but clysters (proposed by some) cannot answer this end, as the seat of the disorder, and the bowel in which the clyster is lodged, are so far apart; and if the clyster be hot, it will tend to encrease the putrefaction, already begun in the stomach, by encreasing heat.

Therefore, as stabbing is the only method yet practised, from which success is expected, I would now say a little with respect to the method of performing that operation; and since it appears that the seat of the disorder is in the stomach, this cannot be performed, with any tolerable safety, until it be swelled so as no part of the intestines may remain between the skin of this bowel and the skin which covers the inside of the carcase, except the (*omentum*) call, which cannot be removed, by reason the stomach is wrapped up therein; and for which reason, a beast that is fat is less likely to recover from this operation than one which is lean, the fat covering, and thereby stopping, the (orifice) hole soon after it is made.

The (near) left side of the beast, is the side on which the (puncture) orifice must be made, and in the following manner; first making these observations.

Standing behind the beast, observe the pin-bones on each side in the best manner you can, (though it so happens that the pin-bone on the near side is sometimes almost hid by the swelling) and also the back-bone, in order to determine the breadth of the loins; which having done, feel for the rib nearest the pin-bone, and the part equi-distant from the pin-bone, the edge of the loins, which is mostly in a line with it; and the said rib is the place for the incision; to make which, procure a knife
with

with a sharp point and thin edge, about four inches long, and half an inch wide in the blade; hold it in the hand in the same manner as a pen is usually held, with the edge towards the heel of the hand; in this manner strike the beast with it in the place described, letting the knife remain in the hole for some time, or till the barrel of a quill, with a wire put through it cross-ways to prevent its going into the belly, can be introduced; otherwise the motion of the beast may cause the belly to move, and the hole therein be displaced from the hole in the carcase, and the air, instead of coming out, spread in the (cavity) hollow of the body, or else the *omentum* stop the puncture: the last prevents the desired relief, and the first is certain death in a little time.

In the latter end of the summer, 1760, a neighbour of mine had upwards of twenty cows and two oxen, which broke into a piece of clover early in the morning; most of them, when discovered, were much swoln: he, being surprised at the apprehension of sudden ruin, and not knowing what to do, sent for me.

On my coming, I observed two of them to be worse than the rest: I attended to those, first ordering that the others should be kept moving, in hopes they might be brought to dung freely, which they soon did, and the swelling did not encrease afterwards, but continued nearly at a stay till afternoon, when it gradually abated. One of the others, being a large ox, which was in good case, and most swelled, I immediately stabbed in the manner before described; and while my knife remained in the orifice, the wind discharged freely: but, as one of the cows was in equal danger, I was obliged to take out the knife for the like operation on her, so left the hole without any thing in it.

The consequence was, after a few minutes the motion of the ox shifted the position of the belly, so that no wind came out: the body encreased; every part was soon filled with wind, insomuch that no exterior marks of bone could be seen; and, in about half an hour, the ox dropped

dropped dead, without any motion after falling, notwithstanding several more punctures were made, but to no purpose.

On my leaving the ox, as before observed, I performed the like operation on a cow, which was not so fleshy as the ox, but as much swelled. While the knife remained in the hole, the discharge of wind was very considerable; and having understood, by an assistant, the hole was stopped I made in the ox, the knife was continued in the cow for some time, till the swelling subsided; after which I took it out, and did nothing more to the wound, save smearing it with a little tar, to prevent the flies fretting it; and the cow did well.

These two instances gave me sufficient hints for the better conducting the operation in future, and from which, and future experience, I think the method laid down as a rule to be the most safe.

I apprehend it not safe to use any sticking-plaister, lest it promote digestion in the wound, and the matter fall into the hollow of the body; nor is it necessary to keep the beast warmer than common, as it is in summer these accidents happen; and too much heat may cause the wounds to putrefy.

I am a well-wisher to every useful undertaking, and remain, as before,

RURICOLA GLOCESTRIS.
L.

NUMBER XLVIII.

Description of a Rape-Threshing (with Remarks thereon) in the North-Riding of Yorkshire.

GENTLEMEN,

IN a postscript to one of my late letters, I proposed, if I had life and health, and could attend a great rape-shearing in our constabulary this summer, to give you an account

account of it, that you might see what difference there is in our method of reaping, rape, or cole-seed, and that of the fen farmers. (See Vol. II. page 262.)

You have been obliging enough, gentlemen, to say, in a note at the bottom of that page, that my account would give you *singular pleasure*, and that you had no doubt of its being *very useful* to your readers.

I attended both the *shearing* and *threshing*, though with some inconvenience to myself, that I might be able to *perform my accepted offer*, and found not such a difference betwixt our method of reaping and that of the fens, as to deserve at present a particular mention; though I may, perhaps, take notice of some particulars in a future letter, in which I may also add some observations on our methods of preparing our land for rape, managing it during the growth, and the general profit of our crops.

At present I shall content myself (and you, I hope,) with as accurate a description as I can give of our rape-threshing, which differs greatly from that of the fen farmers. I mean not to insinuate that our's is *wholly* preferable to theirs: on the contrary, I am of opinion, that our's might be amended in *some*, nay, *many* particulars, if we had courage to break through the obstacles which *custom* and *false shame* throw in our way, the nature of which I shall explain in the course of some remarks on this subject.

To my account, however, I must premise a plea in excuse for any inaccuracies, *viz.* that if your fen farmer found it difficult (as he certainly would) to describe his *cole-seed sale*, in which only about a score of persons were concerned, I must find it much more difficult to describe our *rape-threshing*, in which some scores of persons are concerned, among whom you can hardly distinguish oftentimes the office of many individuals.

The *great* difference betwixt the two methods consists in this, that whereas the fen farmer is content to dispatch his threshing in *several days*, if he has a considerable quantity; our Yorkshire farmer makes it a point to thresh all his in *one day*, how great soever his quantity be; and therefore

therefore, if it cannot be threshed in *one* cloth, he has *two*, or *more*.

Another difference flowing from the former is, that our cloths are much larger than those used in the fens; for, instead of four threshers, we have sixteen, eighteen, or twenty at one cloth.

A third difference, from the same source, is, that whereas the fen farmers lay their reaps a-crofs the cloth, our's lay them in a circle round it, and have a row of threshers on the inside, and another at the outside.

Our reaps are put by gatherers, women or stout boys, into sheets, like those used in the fen-country, only with this difference, *viz.* that light poles on each side are not trusted to loops, through which they might slip in the hurry, and cause delay, but tightly fastened to the sides of the sheet. Two stout men carry these, when filled, upon their shoulders, to the cloth, which is very large, and affords a considerable space on every side of the threshers, and empty them on one side, where the widest vacant space is left, and instantly return to the gatherers, if they do their duty. I need not add, that these gatherers and carriers are in proportion to the number of threshers.

Near this heap, into which the bearing-sheets are emptied, stand stout men, proportioned also to the work in their number, who, when the threshers and their attendants are not on that side of the cloth where the bearing-sheets are emptied, carry fresh reaps into the centre of the cloth, and keep that heap always supplied. I know not that these men have any particular name, though their office is of great consequence, and should be dextrously performed, that they may not incommode the threshers or their attendants, and neither make the centre heap too large, (for it would then straiten the work-people for room) nor leave it too small, (for then the whole work must be delayed.)

The men, or women, or both, as is most convenient, who attend this central heap, are called *layers-on*, their name denoting their office.

We,

We, like the fen farmers, have *shakers*, or *shakers-off*, who immediately follow the threshers, shake up and turn the half-threshed reaps, and, after the threshers have made their second round, shake up and off the straw, and hurry it with forks towards the bolster, where persons are placed to *cave*, or *rake* and *shake up* this straw, that no seed may remain in it: They then raise the straw over the bolster, where two, three, or more men stand ready, with prongs, to push it on to an heap at some distance.

But to return to the threshing circle. As soon as the straw is carried out of it, two or more women on a breast come with instruments composed of rake-shafts, and a piece of wood about four, five, or six inches broad, and about twelve long: these they run along the cloth pretty closely, till they have pushed together as much seed as the instruments can carry. This quantity is then drove to the side out of the circle, and by others carried unto an heap near the winnowers, while the women proceed in their work of gathering up the seed as far as the straw is taken away. The people who attend the central heap of reaps follow the women, and lay on fresh reaps, and the threshers pursue their track.

The seed carried into an heap near the winnowers is shook up a little by a caver, and cleared of the pods, which are thrown over the bolster.

I should now describe the winnowing, but I must first say something of the preparations for it, and particularly of forming the bolster, especially as your fen correspondent has been wholly silent on this subject.

The first thing our farmers do, is to prepare a floor, by pulling up all the stalks of the rape in a *sufficient* and *convenient* place; sufficient, as to space, for the cloth to lie even; and convenient for the bearing of reaps all round with least loss of *time* and *labour*. They then consider which way the wind sits, that it may blow the pods, &c. *unto* or *over* the bolster. A row of stakes are then driven into the earth at that end of the cloth on which the bolster is to be formed, and the first-threshed straw is used to pile up against this row; and when it is sufficiently full, the

end of the cloth is thrown over it, and the bolster is complete.

As to the winnowing, it is thus managed.

Two women stand with hollow wooden shovels, and supply the sieves of two winnowers; and when the heap of winnowed seed becomes considerable, the draughtsmen come and fill their sacks, and lay them on to a waggon, which, to prevent the loss of time in coming and going, is drawn by a very strong draught, perhaps four or six oxen, and as many horses. The seed is then carried home; and if the farmer has sold, so as to deliver soon, he shoots not the sacks; otherwise, if he is likely to keep it some time.

The same method as is above described, being pursued at another cloth, a field of twelve acres, or more, in this constabulary, was this very summer threshed in one day.

I come now, gentlemen, to make some remarks on this method of threshing.

I. It is the established custom, in this part of the world, to receive *no money* for any part of the labour of threshing or rape: but then the farmer is obliged to treat all who come, not only with meat but drink, insomuch that he *makes a feast*, and this for all comers. He brews several quarters of malt; he kills a fat beast and several sheep; he has his oven more than once filled with pies, puddings, and bread; he has a fidler at every cloth; he has barrels of ale ready broached near every cloth, and persons to attend, that every comer may be supplied to his wish.

II. For fear he should be obliged to have more than one day, (the expence of which is so great, as to fall somewhere between ten and fifteen pounds) he not only invites all his relations, friends, acquaintance, and neighbours near, but even at some distance: and therefore, if the proposed day, of which they have notice some time before, prove rainy, it is a terrible loss to him; for the people who come must be entertained.

III. The consequence of this is, that the farmer has always great numbers of *useless, troublesome, and expensive* guests. Every man who brings his flail from any distance, brings

brings his wife, his daughter, or both, or even little children, to partake of the feast.

IV. Another bad consequence is, that almost every man is ambitious of being a thresher, which is a work he may make almost as light as he pleases; and when there are more threshers than sufficient, they confound both each other and the attendants, who cannot bring the reaps, or remove the straw or seed for them. The farmer has often not influence enough to persuade these *volunteer idlers*, rather than *workers*, to become *bearers* rather than *threshers*, though the former are absolutely necessary to find the latter work. He is obliged to observe some measures with these shameless people, whom he must consider as *guests* and *friends*, though they do much more *harm* than *good*, and are indeed only *devourers*. For this reason he is obliged to appoint several friends of experience and some authority, who can decently take more liberty than himself, and sometimes use reproaches, and vent, from time to time, such sage maxims as this, "Every *minute* is an *hour*;" that is, "it is equally precious as an hour at another time;" or, "All of you in a minute can do what one would in "an hour."

V. The numbers of people on the field are such, that the farmer frequently knows not the greater part; nor dares he ask them their names, or places of abode, as such a question would be thought a *violation of hospitality*, and secure to him, and perhaps his descendants, the name of *miser*. Such are the obstacles, above hinted at, to a reform in this shameless practice. Many people come to the field so well dressed, that their dress is a plain proof they do not intend to work. My neighbour is thought to have had three hundred people, or more, on his field. As it is impossible to entertain these in any farm-house, the farmer erects long cross tables, formed of planks laid over *firkins*, on some dry pleasant hill near his house, and, if he can, under *shade*. The very people employed in preparing and conducting the feast are a considerable number.

VI. The sight of these preparations for dinner, and the desire of having nothing to do but to *eat, drink, sing, and dance*, are the *strongest*, nay, *almost only* inducements to the tumultuous multitude to finish the work, which is, indeed, completed in a very few hours. They begin at ten or eleven in the morning, and end at two or three in the afternoon. From this time, all is a scene of riotous merriment. Though the graver people retire sooner, the wilder stay till next morning, or at least till they have drank the farmer dry.

VII. One great inconvenience attending our method of threshing of rape, regards not the farmer who threshes, but the public; and this is, the drawing a vast number of useful *hands and eyes*, both the *workers* and the *overseers*, from country business, especially our hay-harvest, in a whole track of country; so that, if we happen to have three or four rape-fields in our neighbourhood, it is incredible how much we suffer in our hay, &c. especially if the weather proves catching, as it has been remarkably this year.

VIII. The size of our rape-cloths is so great, that the expence of getting one, with its appurtenances, is very considerable; and therefore we have few in the country. These are lent out at about five shillings by the day; and people who have rape-fields bespeak them long before, and, lest they should be disappointed, bespeak more than they are likely to want; and, if a bad day prevents one man's threshing as he intended, this often occasions the disconcerting of the whole series of rape-threshers. The farmers, who have rape to thresh, attend the threshing of those who precede them in order of claim to the cloth, and thus often neglect their own business, and return without the cloth too.

IX. Another great inconvenience attending this method of threshing is, that the damp weather, which often prevents threshing, spoils the fresh meat provided, and puts the farmer to the expence of new provisions, I have known a farmer provide three times.

X. The last inconvenience which I shall mention is, that all comers turn their horses into the farmer's ground nearest

nearest to his house, which is almost always his cow-pasture; and forty or fifty hungry horses, or even a much less number, do him infinite damage there, especially if his pasture be not *large and well grown*. I have endeavoured, gentlemen, to perform the offer made by,

Your humble servant,

East-Newton,
August 21, 1764.

THO. COMBER, jun.*

NUMBER XLIX.

An Examination of some Points in a famous Calculation in favour of the New Husbandry; Queries about the Quantity of Straw in both Methods; Reflections on the Expence and Complexity of Drill-Ploughs; and on the Notion, that Dew is an Advantage to Wheat when cut.

GENTLEMEN,

IT is not only my *profession*, but my *practice*, in all disquisitions, to attend *impartially* to the evidence on both sides of the question. That concerning the preference of the *old* or *new* husbandry is of the utmost importance to the nation, and therefore certainly ought to be attended to with the utmost exactness and impartiality.

I confess myself, after a full examination of all that has been said in comparison of the two methods, to *incline* to prefer the *new*, where it can be practised with any *tolerable convenience* as to its requisites, *viz. proper instruments and dextrous men*.

Yet I would have nothing advanced, even in favour of the side I prefer, which will not bear examination; and as I apprehend *two points* to have been advanced in the famous calculations of M. de Chateaufvieux (as inserted by Mr. Mills

* We acknowledge ourselves much obliged to Mr. Comber for this account, which cannot but be useful and entertaining to many of our readers. E. R.

Mills in his *Complete System of Practical Husbandry*) to evince the preference of the *new husbandry* to the *old*, which, I think, will not prove that preference, at least with us *Englishmen*; I esteem it my duty to lay my apprehensions on this subject before the public.

I. "In the common husbandry of this country [the neighbourhood of *Geneva*] the farmer," says *Monf. de Chateaufvieux*, "can have but one crop in that time, [two years] being obliged to sow his land only every second year; and that one crop will fall greatly short of the two which the new husbandry will produce.—A vast advantage in favour of this last!" (See *Mills*, Vol. I. pages 129, 130.) We have the same point in calculation advanced by him again (in page 140.)

Now, by whatever circumstances of peculiarity the people about *Geneva* are obliged to have only one crop in two years, these ought to have no weight with us *Englishmen* in determining the preference due to the *new husbandry*; for, in the common course of our *old husbandry*, we have two crops in three years, or three crops in four years; and though we have not two wheat-crops in immediate succession, yet our crops of beans, peas, barley, and oats, are obtained with so small expence of cultivation after our wheat-crops, that no one seems to doubt but the clear profit is greater; and many, who raise wheat under great disadvantages, are content to have the succeeding crops, or even crop, of worse corn for their profit for the whole culture. Three, or even two, crops then with a fallow, as is usual with us, must not be considered as only equivalent to one crop with a fallow, which the neighbours of *Geneva* have.

But I am obliged by impartiality to remark further, that even our *old husbandry* is now so much improved, as not to leave us under the necessity of having any year without a crop.

It is well known, that many farmers, with great success, sow clover with their barley, and, in the summer which succeeds the reaping of that barley-crop, take one crop,

if not two, of the clover, and then plough it in and sow wheat. Others sow turneps, then barley with clover, then reap the clover and sow wheat.

Experience of other neighbouring countries, and even our own, now shews us, that we may sow carrots, and several other roots, and then pursue, with success, the same routine, or course, as though we sowed turneps; and Mr. Mills has assured us on * good credit, that a crop of parsneps is esteemed of equal value with *three crops* of wheat, of four quarters to the acre!

II. "It may, perhaps, be thought odd," says Mons. de Chateaurvieux, "that I should limit the produce of the field, sowed in the common way, to three times the seed. I know there are lands in this country which yield more, viz. four or five times the seed, and sometimes upwards: but then it must be granted, that there are but few such lands, and that they are fields in extraordinary fine tilth, and enriched with manure. I therefore speak of our lands in general, taking good and bad together. In this case, I say, the produce, one year with another, will not exceed three for one." (See *Mills*, Vol. I. p. 140.) He adds, that his "fields have always been as well cultivated as any in the country;" and that from careful accounts it appears, that in the course of sixteen years they have not produced more on an average.

Now, gentlemen, if the poorness of these crops about *Genova* be not the effect of want of culture in the old way, every new method, which will assist the poorness of the soil, is of great consequence to that people; and yet ought not we *Englishmen* to make this point of calculation, viz. the ground's giving only three for one, that is, two thirds produce beyond the seed, a ground of preference of the new husbandry.

Mr. Miller on this subject says, "In some shallow, chalky, down lands, where near four bushels of corn
" have

* See *Observations de la Société de Bretagne pour les Années 1757 & 1758*, page 90.

“ have been sown, I have known the *produce* not more “ than *double* the seed.” (See his Gardener’s Dictionary, Art. *Triticum*.) But this is not to be ascribed to any essential defect in the method of the *old husbandry*, but either wholly to the *badness of the soil*, or *chiefly so*, and, for the rest, to the *bad practice* of the *old husbandry*; for the same gentleman adds, that he has known, on good ground thin sown in the common way, above ten quarters on an acre. (See *ibid.*) Now, if the corn on this good land stood thin, we may safely conclude, that it was sown thin; so that probably not above three bushels, if so much, were sown; and then the produce will be to the seed as twenty-seven to one, or nearly; and Mr. *Miller* justly mentions twelve quarters as a great crop in the best management of the new husbandry. (See *ibid.*) The question then is, whether this additional quantity pays for the additional expence, trouble, &c. in the new husbandry, which it probably does very well in circumstances where proper instruments can conveniently be had, yet not so as to leave the difference of the *nett profit* of the two methods any thing like what it has been represented under the circumstances above examined.

III. Another point, which seems to me of great consequence to be enquired into, is, whether the quantities of straw produced by the *new husbandry* be as much superior to those produced by the *old*, as the quantities of corn are supposed to be.

I propose not this query to discountenance the *new husbandry*, to a preference of which, on the whole, I incline; but that so interesting a fact may be determined. I call it *interesting*, because the straw of a good crop of wheat is in any year of great value, and in some years (such as 1762.) of *prodigious* value, towards supplying the deficiency of hay.

From the account which M. *de Chateauxvieux* gives of the stubble of his wheat, it would seem that what may be wanting in the number of stalks, if there be any want, is amply made up in the strength, bulk, and weight of the

the straw in the new method; and I should not be surprised if it appeared that the real quantity of straw is greater in the *new* than the *old* husbandry; for the corn must be fed by the straw, and therefore one would conclude, that where there is a superiority of corn, there must be a superiority of straw, as to *real quantity*, though not as to *length*.

But, on the other hand, since we know, that bad crops frequently run to straw, insomuch that there will be many *stalks*, nay *tusfs*, with *little* or *no* corn, this point seems not so clear as one could wish; and though a loss in corn is not easily made up in straw, yet I think it very probable that the straw of a *bad* crop of corn may out-weigh the straw of a *good* one; and it will be an *useful* as well as *entertaining* employment to ascertain this fact.

IV. What seems to me the *greatest* and *almost only* considerable objection to the new husbandry, is the great expence of forming, and keeping in order, an *hoe and drill-plough*. Mr. de Chateauvieux has told us, that he thought Mr. Tull's too complex. (See page 131. of *Mills*, Vol. I.) But will not any impartial enquirer say this of Mons. de Chateauvieux's? I fear he will, when he sees that Mr. Mills was obliged to employ no less than eighty pages in describing it. We have another advertised; but, as I have neither seen the *model* nor its *description*, I can only say, that I wish it may be so much more simple and cheap as to encourage the giving a fair trial to the *new husbandry*.

And here I must again lament, that the society for encouragement of arts, &c. have stinted the *time* for composing accounts of the best methods of cultivating wheat, &c. to so short a period. It is to be hoped, that they will extend that time, in order that they may receive accounts worthy of the premium, honourable to the society, and most highly useful to the public.

V. The writers in favour of the *new husbandry* have, very judiciously, begun their collections by experiments, to shew that the sowing with the drill at equal distances, without alleys, gives better crops than sowing by the hand in broad-cast; and then they bring very naturally

other experiments to shew, that sowing with alleys, so as to *horse-bee*, gives much better crops than sowing without them. If any body then can shew, that *sowing with the drill* is a worse method than sowing with the hand, he overthrows the credit of the new husbandry; and that it is a *worse method*, seems to be the opinion of one of your correspondents, unless by *drill-husbandry* he means the *horse-beeing husbandry* in its full extent, as is sometimes meant; and then his censure of the *new husbandry* is full and direct. His words are, "Drillers (I was formerly "one)"—and seem to me evidently to contain a * condemnation of the drill-husbandry: and *Rusticus* will oblige the public much, if he will assign his reasons for *giving over this practice*; for *converts* from any opinion are always heard with most attention, and their arguments have generally most weight. (See page 168. of your Second Volume.)

VI. A late author of A New and Complete Body of Husbandry has observed, that dew plumps wheat when cutten. But does dew *improve* it? I think clearly otherwise. The purpose of corn standing in the field when cut, is to *dry* and *harden* it; and it generally wants some field-room, unless the owner is injudicious enough not to cut it till full ripe, when it must waste greatly.

Dews are certain concomitants of the best weather in the wheat-harvest, at least with us in the north; and, no doubt, as the skin of wheat is tender, especially while in the field, the dews do penetrate and plump it, and make it appear better to the view when threshed and on sale in the market, and fill the bushel better, consequently bring more to the farmer: but, according to all my philosophical notions, the dew must *retard* the very design of giving of field-

* The purport of the whole passage from whence these words are taken, is only to condemn the drillers for rejecting the use of manure on moderate land, especially for turneps. But the parenthesis seems a condemnation of the whole practice of drilling, though only an *incidental condemnation*. *Rusticus* would not have given up the whole practice of drilling, because drillers usually decry manure, but would have added *manure* to *drilling*, had he not espied essential defects in the method, in his opinion. COME.



Annual Poa



Meadow Fox-tail



Fine Bent

field-room, if not absolutely *disappoint* it; and for any one's use the wheat is really of so much less value as it has imbibed more dew; consequently, any man, who houses wheat for his own use, will let it have as little dew as he can.

The author of this opinion, which I am controverting, Mr. *Mills*, (see page 396, &c. of his First Volume) owns, that these dews are only necessary in *cold* summers; for the grain's own vigour will plump it sufficiently in *hot* ones. He says, that in the former the husks cling so close, that they must be plumped by dews in order to make them *thresh* well. But it seems very bad oeconomy to make corn, already *too moist* and *cold*, still *moister* and *colder*, in order to thresh somewhat better; that is, to spoil the meal to save a little labour. He owns also, (page 399.) that even in the middle of *August*, the *dewy* nights grow so long, that the corn is in much more danger of growing in the sheaf, and the straw of being tendered and damaged, especially for fodder. (See page 396.)

I am, GENTLEMEN,

Your faithful and impartial correspondent,

East-Newton,

THO. COMBER, jun.

Aug. 23, 1764.

P. S. If I have leisure, gentlemen, I shall probably examine the account of the drill-plough invented lately in *York*, and communicate to you my reflections thereon, if you desire them*. One thing I observe in regard to the newly-advertised plough, *viz.* that it is fitted to all kinds of soil; whereas M. *de Chateaurvieux* seems to confess, that there are several to which his plough is not fitted; so that other instruments must be sought out. (See page 101. of *Mills's* First Volume.)—N. B. He excludes both *stoney* and *clayey* soils from the use of his plough, though the latter is most proper for wheat.

* We shall be obliged to Mr. Comber for his remarks on Mr. *Randall's* universal seed-furrow-plough, which is, we suppose, that he means: on examination we are inclined to think he will find it better adapted to drilling all sorts of grain. than any of the foreign machines. E.

F f 2

NUMBER L.

Reflections on the Culture of Rye; with some useful Hints for such Farmers as may chuse to sow it in the Spring.

GENTLEMEN,

IN consequence of the request of your correspondent Mr. *Mitchell*, (page 151. of your Third Volume) that “some of your correspondents would say a word or two about rye, which, though *not equal* to wheat, is a very “good grain,” and the confirmation of that request by yourselves, I sit down to throw together some reflections on this subject, which I may suppose myself to understand tolerably, as great quantities of this grain are every year grown in this neighbourhood; and I have known one thousand stooks, yielding each above a bushel, brought to my father’s barn and stacks in one year off this estate.

Mr. *Mitchell*’s request plainly expresses his expectation to be rather of *occasional reflections* on the culture of this very useful grain, than a set discourse thereon; and I shall accordingly only note such things relative thereto as seem to want illustration, confirmation, or refutation, in writers on this subject.

I. Mr. *Mills* begins his account of rye by saying, that it “is *generally sown on poor, dry, gravelly, or sandy lands.*” (See page 370. of his First Volume.) But there is a kind of soil, which comes not properly under the description of any of the above, on which much excellent rye is grown in this and many other parts of the kingdom, *viz.* a limestone soil. The stones which are cast up here by the plough, are much too large to come under the name of gravel. They keep open the soil, and render it fit to imbibe all the genial influences of the heavens, and the juices of those manures which are mixed with it.

II. Mr. *Mills*, in the next place, tells us, that “it “would not be *right* to sow this grain on land which “will bear wheat, because the value of rye is *greatly inferior.*”

"*ferior.*" (See *ibid.*) It would have been more satisfactory if Mr. *Mills* had assigned either some *good reason* why the value of rye is *greatly inferior* to that of wheat, or at least some *good authority*: but unfortunately neither reason nor authority can be alledged in support of this assertion; on the contrary, Mr. *Mills* himself has alledged an authority, above exception, elsewhere on the other side of the question.

One of your correspondents, who styles himself *Once a Farmer*, sensibly observes, "It is evident we must not always judge of our profits by the sum we receive, for it is also sometimes necessary to take a retrospective view of our expences." (See page 155. of your Third Volume.)

We must, in the next place, consider it as a *notorious* fact, that when rye is well managed, it is a *greater crop* than wheat with equal management: and, in the third place, it is *equally notorious*, that the straw of rye is much more valuable, both for *thatching*, *bedding* and *fodder*, than the straw of wheat, though Mr. *Mills*, and some of his correspondents, are so much mistaken as to think otherwise. Again, let us reflect, that the price of the seed is less than that of wheat.

Let us add, that rye is an hardier crop, suffers less from the frosts, &c. of winter, is forwarder in spring, &c. bears a bad harvest better, and is therefore a *less precarious* crop.

Lastly, let us consider, that it sells generally for three fourths of the price of wheat, or more; so that, the other circumstances considered, there is no reason to say, that rye is a crop *greatly inferior* in value, in *nett profit*, to wheat. But, to assign our authority, the marquis of *Turbilly*, as cited by Mr. *Mills* himself, has asserted, from exact accounts kept by him, that he has found rye as *beneficial* a crop as wheat; though he thought wheat-straw better for horses, the contrary of which is well known.

III. As it appears above, that Mr. *Mills's* reason why it is not right to sow rye where wheat will grow, is not

the *right one*, it may be expected that I should either deny the position *universally*, or assign a *true one*. I will do the latter. It is frequently not right to sow rye where wheat will grow, because the nature of the soil is often such, that a bad crop of rye will grow where a good one of wheat might be raised, *viz.* in very stiff soils. Rye requires a *dry, light* soil; and though wheat may do very well on such, if rich and deep enough, yet rye, on the contrary, cannot thrive on a stiff clayey soil.

IV. Mr. *Mills* relates, on the authority of his justly-favourite Dr. *Eliot*, a fact which must, at first, surprise, *viz.* "If rye be sown *successfully every* year upon the same land, both the crop and land will be greatly improved; inso- much that some grounds, which would yield but five bushels to the acre at first, have in time afforded a crop of fifteen bushels to the acre, without the charge of dung or any manure." (See p. 372. of his First Volume.) The authority of Dr. *Eliot* for *integrity* and *judgment* is such, that a fact vouched on his experience is likely to have many followers, especially where the practice flatters the *idleness* and *avarice* of husbandmen.

Now this is likely to be the case in the present instance; and Mr. *Mills* should have taken *peculiar care*, as he chose to record the fact, to warn the husbandman against the evil consequences of it; which he has not done, though it might have been more particularly expected from him, who has begun the third section of his First Volume, by saying, "Experience soon taught men, that even the most fruitful soil cannot *constantly* yield the same grain." (See page 346.) Now, as this fact of Dr. *Eliot's* recording follows at no great distance, it might be considered as an *abatement*, or *correction* of, if not *contradiction* to, the general preceding assertion, and therefore should have been sufficiently guarded by proper cautions. What Mr. *Mills* has not done, I think myself obliged to do, for the reasons assigned, to the best of my power.

The case then which Dr. *Eliot* records, seems to me to be of a *peculiar* nature, and which should by no means be

be extended to a *general* practice. He speaks of ground *newly broke up*, and not *sufficiently mellowed by the plough*. These two circumstances account for all the surprising ones.

The wretched crop of five bushels is to be accounted for by the want of tillage; and the improvement of the crop and soil are to be accounted for by the pulverising the land more and more for subsequent crops, the natural freshness of the ground then giving its full return. But if the ground thus brought into tilth had been still longer sowed with rye every year, it would soon have appeared in this, as in every other case, that the crops would have decreased, unless the principles of the new husbandry prevent such decrease.

V. Mr. *Mills* informs his readers, that the usual allowance of seed-rye is about two bushels to the acre, and the crop is about twenty bushels. (See page 371. of his First Volume.) Now, it is very usual, in this and many other parts of *Yorkshire*, to have above thirty stooks of fine clean rye, which will yield each above a bushel, on one acre.

VI. Mr. *Mills* says, with truth enough, that "a little sprinkling of dung, or mud, though it be but half the quantity commonly used for other corn-land, will, if laid on rye-ground, greatly advance the crop. (P. 371.) But no good husbandman with us contents himself with this management. We depend much on our rye-crops, which are very valuable.

We plough our ground with as great care, and as often, for rye as for wheat; and we manure it as well in proportion to the strength of the soil. Good rye has brought four shillings and four and six-pence by the bushel, in this country, these two years, while wheat sold for five or six shillings.

Our grounds give such good crops of rye, with due management, that I have known many farmers content therewith, when rye sold for two shillings the bushel. What must they be, when it sells for four shillings and four and six-pence the bushel, with the same management, and their crops not much thinned?

VII. I have

VII. I have observed elsewhere, that the practice of feeding down wheat with sheep is *problematical*, and only to be determined by a diligent consideration of all circumstances. Your sensible correspondent, "Once a Farmer," writes in the same strain. (See page 152. of your Third Volume.) Mr. *Mills* asserts, that "in *Leicestershire*, "where they *absurdly* winter-feed their wheat by consent, "they *never* feed their rye, because it is *too tender* to bear "it." (Page 373. of his First Volume.) But this gentleman seems here, as in several other places, too positive.

Experience shews that in this country farmers frequently winter-feed their rye, without *any* disadvantage; nay, probably with advantage, if the blades are very luxuriant, and the land rich enough to bring on the new shoots after the sheep are taken out, and the sheep be taken out early.

The apprehension of Mr. *Mills*, that the sheep's feet will make a multitude of holes, which will retain the water and hurt the rye, is without any good foundation; for, though it is true that rye cannot bear much wet, it is equally true, that the proper soil for rye being *dry* and *high*, the small quantity of water which is retained in the sheep's footings cannot do it any harm. New treadings fill up the former, and fix the soil at the roots of the corn, and the sheep's dung and urine enrich the soil.

If any one has a doubt that this representation is not just, let him go on to a rye-field of *proper soil and situation*, from which sheep have been drove in a fair morning in spring, when a wind rises. If the soil is at all moist, he will see innumerable footings; but let him return in the evening, and he will be amazed to see how much one fair and dry day has altered the appearance. The mellow earth once dried will fall; and any rain, not excessive, which follows, will rather do good than harm to the plants.

I plead for this practice, under proper restrictions, as a convert on the best conviction; for, during all the time that

that my father kept the main part of this estate in his own hands, he never suffered any sheep to feed on his rye; but the success of our neighbours, who have fed sheep on like soils with great success, under proper restrictions, convinces me that we were great losers by not giving into their practice, especially as the eating of the first shoots of rye makes ewes milk extraordinarily.

VIII. Rye is very excellent for giving a good skin to horses, as it is loosening, and carries off foul humours, which hard exercise and bad provender may have left in them. It is also a most excellent feed for geese. I cannot say the same with respect to hogs, for which animal it seems to me to be too loosening; insomuch that I have given a great deal of it to them when put up to feed, both dry and boiled, without perceiving any advance in their flesh.

IX. Rye is very generally liked for bread by the people of countries in which it grows commonly, and who are therefore much used to it; insomuch, that many of them scruple not to prefer it to wheat, the bread of which presently grows dry. There are, however, numbers of persons, who, though used to it from their youth, can never relish it. Some object to the sourness of it when made with leaven, and others to the *natural sweetness* of the grain, which is disagreeable, especially with the favouriness of flesh meat; and, indeed, I am myself of this number.

X. I agree entirely with Mr. *Miller*, that it must be very bad husbandry to sow wheat and rye together, as the latter will ripen much earlier than the former, and several obvious inconveniences ensue. They who like messin, (of which number I am not) may mix them to their mind when carried to the mill, without any inconvenience.

XI. So many incidents may hinder the sowing of rye in autumn, (because, as Mr. *Mills* well observes, [page 370. of his First Volume] the ground should, by all means, be dry when it is sown, and heavy rains after it is sown may rot it in the ground before it come up) that the sowing of *spring-rye* becomes an object well deserving our

attention : and all the directions and cautions which can be given about it should be nicely attended to. Yet Mr. *Mills* seems so deficient on this head, that having (in page 406.) begun to treat of the culture of spring-corn, with the article of wheat, he passes thence directly (in p. 408.) to treat of *spelt*, and never says one word of the culture of spring-rye, but passes on to oats.

I shall endeavour, by some short observations, to supply, in part, this deficiency.

XII. I will begin with what Mr. *Mills* has mentioned incidentally on this subject, on treating of wheat and rye in general, *viz.* "When sown upon light land, it [rye] ripens much earlier than on cold stiff ground; and by continuing to sow it in such a soil during two or three years, it will be forwarded so much as to ripen a month earlier than that which has been long raised upon strong cold land. For this reason, those who are obliged to sow rye toward spring, generally provide themselves with this early seed." (Page 371. of his First Volume.) This practice certainly should be followed.

XIII. Mr. *Mills* has observed, (page 406.) that wheat may be sown with good success even a little later than the middle of *March*. Now, as wheat has a stronger body than rye, and requires more time to perfect it, and ripens later, we may conclude, very reasonably, that rye may, with success, be sown *even later* than this time, especially if a very early sort be provided.

XIV. As dryness is essential to the success of rye, it seems adviseable to delay the sowing of spring-rye as long as can be, with any prospect of success, rather than not have both the ground dry for sowing, and the succeeding weather for some time after sowing likely to be fair; especially as rye soon rots in the ground, if wet.

XV. The ground designed to be sown with rye in spring, should be laid in winter with high ridges, and have good drains to carry off the water, that it may be as dry as possible when sown.

XVI. Hot

XVI. Hot manures should be used, and particularly lime, which will bring on a speedy shooting. It was long a prevailing opinion, that lime was not a proper manure for the soil in which the lime-stone was found; but experience has shewn the vanity of this notion.

XVII. Rolling may be more necessary to settle the earth about the roots of plants of rye sown in spring than in autumn; for the winter frosts will have broke down the clods on to the roots of the autumn-sown rye, though indeed the rains may have partly washed that earth away.

XVIII. A moderate sowing of foot, after the plants are come up and rolled, may be of great advantage.

Thus, gentlemen, have I (to the utmost of my power) complied with Mr. *Mitchel's* request and your's; and from what has been already wrote on this subject, it may appear, that if the society for encouragement of arts, &c. had given a longer time for composing accounts of the best method of cultivating rye, they would have been much more likely to receive satisfactory ones.

I am, GENTLEMEN,

Your faithful correspondent,

East-Newton,
October 19, 1764.

THO. COMBER, jun.

NUMBER LI.

An Account of some Experiments made in sowing and transplanting Burnet, in drilling Oats, and transplanting Lucerne.

GENTLEMEN,

I Have been a purchaser of your *Museum* from the beginning, and confess, that after the institution of the society of arts, &c. I thought a work of this sort would makes its appearance with great propriety, and therefore was much pleased when I first saw it advertised.

Some of the pieces you have published have great merit in them; some, I am sorry to say it, not so much; witness

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the Reverend Mr. Comber on burnet; mere disputation on its botanical name, which, when fixed, will be of no consequence to the farmers in this kingdom: what care they whether it is the *pimpinella sanguisorba* of Ray, or the *pimpinella* of Linnæus?

Let Mr. Comber buy a pound of *Rocque's burnet-feed*, the seed of that grass which "the society have been informed continues in sap all the year, and is a food very agreeable to cattle, especially to horses*," for the cultivating of which they have offered several premiums. These seeds I would have him sow; and, if he is really desirous of being of service to his country, let him inform the public, whether burnet is a grass that cattle will eat or not, and, if they will eat it, whether it is found to be a nourishing food: this is the only point in dispute, at least the only point there need be any dispute about, or that the farmers will attend to; for botany serves only to puzzle the cause. Names are arbitrary: Mr. Wyche, Rocque, the society, call *this* grass *burnet*; so do I; so does my gardener; so do all the gardeners in my neighbourhood.

When I first heard of the design to cultivate burnet as a grass, I confess I was quite unacquainted with it; but, on enquiry of my gardener, he carried me to that part of the garden where his pot-herbs were, and shewed me a patch of it, about four feet by six; he told me it was common in all gentlemen's gardens; that it was used as a pot-herb, and in fallads: upon tasting it, I found it had greatly the flavour of a cucumber.

This was, I think, in the month of June, 1763. I ordered it to be cut down directly, and thrown in the field to my cows; they eat it up directly: presently after they were gone, I observed my hogs very busy in picking up what the cows had left.

This pleased me much; and from the time of my cutting down the burnet, as before mentioned, when it was about twenty inches high, it grew, by the end of the summer,

* *Vide* the society's list of premiums,

mer, to much the same height again. I let it stand through the winter, and observed that, when the snow lay very thick upon the burnet, that part of it which was above the snow had all the verdure of spring, and did not seem at all to flag.

Last summer, (1764.) after peas were taken off a piece of ground, I bought five pounds of Rocque's burnet-seed, and sowed it broad-cast (the third of July). It came up very finely; and the latter end of August, when it was about six or seven inches high, I ordered it to be mowed, in order to destroy the weeds that were among it: it soon shot up again, and topt the weeds.

By the fourth of October I had got two acres of light, dry land, that had had a crop of oats, well ploughed, twelve inches deep: these two acres I directly planted out with my burnet-plants; and it is a fact, that, though planted so late as from the fourth to the tenth of October, the plants in general took, and have actually vegetated through the winter, and are now in very promising condition.

The plants are in lines, about twenty inches apart, and about fifteen inches from each other, in order to pass Monsr. Lullin's cultivation through them.

I intend soon to sow two acres of burnet in broad-cast, which I am inclined to think, from what I have observed of it, is the best method of cultivating it. I shall sow fourteen pounds of seed to an acre; and I am persuaded that the farmer may sow it very safely in autumn or spring, as suits him best.

From what judgment I can form, I look on it as a great discovery. I live but a few miles from Mr. Rocque, and have several times this winter rode by his burnet: it looks surprisingly well, and is a fine deep feed: there are three or four acres of it, but unfortunately they lie in the midst of garden-grounds, so that large cattle cannot be put on it. However, with submission, I think the society were to blame in giving Mr. Rocque the fifty pounds till he had hurdled on a few sheep, and tethered a horse and cow; then the point would have been determined,

as to these cattle eating it, and the consequence of it when eat.

For my part, I am always open to conviction, and glad of information; and must needs own, that your correspondent, P. H. page 33. of this Volume, alarmed me a little, till I recollected that a gentleman from Northamptonshire, who dined with me last summer, told me, that burnet grew in their fields, and that the cattle did not seem to chuse it: I took him directly into the garden, and shewed him my burnet; he said it was not like theirs, which I take to be the wild burnet of Mr. P. H.

This wild burnet may abound with a pungent oil, for aught I know; but I do not believe it to be so with the garden or pot-herb burnet; at least, I cannot distinguish it by eating it.

Again, Mr. P. H. says it keeps long green, and appears early in the spring: from this we may very fairly infer, that the wild burnet dies down in the winter; but Rocque's burnet is an ever-green; so that they differ as much as an elm and a fir.

Again, it is well known that turneps are an excellent food for cattle: yet I know, and so do many, that some cows will not eat them at first, till they are compelled to it; then they will soon come to eat them greedily, and thrive fast upon them.

So, of the human race, we know there are some things which we lothe at first, that are wholesome food, and which use reconciles us to, and we afterwards become very fond of.

Thus have I freely, and I hope clearly, given you my opinion of burnet: the success that attends my transplanted burnet you shall know, if you desire it*. Perhaps, by comparing it with the success that attends Lord Northington's,

* We esteem ourselves greatly obliged to this correspondent for the favour of his letter, and hope he will be satisfied with the manner in which it is inserted. If he will give us, some time hence, an account of the success of his transplanted burnet, we shall be still more indebted to him. O. T.

ton's, at the Grange, which I hope will be communicated to you, this very important matter will be fully cleared up to the farmers in general.

I cannot help observing how much more important this short letter of A. B.'s, on the experiment to be made at the Grange, is to the public, than all the vague conjectures which can be made on burnet.

For my part, I am not ashamed to own, that I bought, about eighteen months ago, Mr. Mills's Complete System of Practical Husbandry, and honestly declare, that I look upon it as a most valuable work; in short, as the completest in our language. I quite agree with Monf. Lullin, *que c'est un ouvrage infiniment estimable* (that it is a work of infinite value); and I heartily wish every intelligent farmer in the kingdom had it: I am confident nothing would contribute more to procure you a number of very valuable correspondents; and I was sorry so able a correspondent as Y. of Bradfield, should complain of the substance of Monf. Du Hamel's works being part of it. For my part, I am much pleased with having the knowledge of so many great men laid before me at one view; nor can I comprehend what Mr. Comber means by so violent an attack upon Mr. Mills's account of burnet; when Mills in his account of it says, "The public are indebted to Mr. Rocque for his judicious observations and culture of this plant, which he had, with obliging readiness, communicated to Mr. Mills to be inserted in his work, as they had *never before appeared in print*:" and therefore, though Mr. Comber seems to be aiming at Mr. Mills, he is really wounding Rocque; else to what end the note, page 357? What is it to the public whose gardener he was? He is, as I am told, a man of exceeding good character, and a man of substance. This puts me in mind of Scaliger's saying of Montagne, in regard to his love of white wine: What the devil is it to the public, says Scaliger, whether he loves white or red wine? We are talking of *burnet*, not *Rocque*; the *thing*, not the *man*; however, *verbum sat sapienti*.

Last

Last summer I drilled some oats in a field, the other part of which was sown broad-cast: cattle broke in about the time they were ripe, so I can say nothing of the quantity. I must own they were near as tall again as those sown broad-cast, the haws much larger, and the grain much finer.

I was surprised to see a six-shilling book advertised on the subject of transplanted lucerne, and was much obliged to your correspondent, Eboracensis, for his extract from it: by him I find it is a philosophical learned work. It is pity these learned and botanical gentlemen will not remember that farmers are to be their readers; at least, they are the men they should wish for their readers.

Monf. Lullin de Chateauvieux is the author of this method: his directions (see Mills's Third Vol. p. 259.) are so short, yet full, that I really think there was no need of any thing further on the subject; or all that need have been said, might very well have been comprised in a letter to the authors of the *Museum Rusticum* *.

Monf. Lullin's reasoning appeared to me so strong and satisfactory on this subject, that last year I went to work, and in the autumn planted about two acres and a half: very few of the plants have failed, and it now makes a very beautiful appearance. All that I could have found worthy to be said on the manner, expence, or success, would lie in a small compass.

You may judge of my good wishes for the success of your work by my writing you this long letter, when I tell you, writing letters is what I am by no means fond of.

I am, GENTLEMEN,

Your most humble servant,

February 11, 1765.

MAGO.

* We think it necessary to observe to our correspondent, that the work above referred to (though, perhaps, not so well adapted to the reading of the common farmer) contains many valuable remarks on the antient and modern states of husbandry in most parts of Europe; of coarse, country gentlemen, who have had a liberal education, will be far from thinking the time mis-spent they may employ in reading it. E.

NUMBER LII.

Observations on the Smut in Wheat.

GENTLEMEN,

I Read, with some degree of satisfaction, a piece inserted in your Third Volume, page 380, marked Numb. XCV. which proposes a simple method of preventing the smut in wheat.

I am sorry, however, that your correspondent should be so much a lover of brevity, as to say no more on a subject of such infinite importance.

The truth is, we English farmers have hitherto known very little of the nature of this disease in wheat, imagining that whenever the corn was black it was infected with the same disorder; but this is far from being the case, as any of your readers may see, by referring to a piece* written by Mons. de Gouffreville of Normandy, published in the Second Number of the *Foreign Essays on Agriculture, &c.* (which I cannot but esteem a very useful work) and containing a detail of a number of experiments made by the above gentleman to ascertain the cause of the smut.

I was not a little pleased to find that the method prescribed in this invaluable Essay, for guarding against this distemper, does not materially differ from that recommended by your correspondent, the Norfolk Farmer, above mentioned.

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* We have perused this piece with singular pleasure, and cannot, on that account, resist the temptation we have of recommending it to the notice of our readers. It is written with modesty and perspicuity: the several experiments are very fairly laid down, and the remedy prescribed is simple, cheap, and easily practicable by every farmer, let his circumstances or situation be what they may.

The advantages resulting from the banishment of this disorder from our crops are too self-evident to need pointing out; and truth obliges us to acknowledge, that this short Essay, written by Mons. de Gouffreville, is likely to be of more real and solid advantage to agriculture, than, perhaps, any single piece that has been published for twenty years past. Several other articles in the *Foreign Essays* attracted our attention, which, though not of equal utility with that above mentioned, are still deserving of our readers notice. E. R.

Both these gentlemen depend on the clean washing of the seed, and the trials of both met with the wished-for success.

Though our national husbandry is in general greatly superior to that of foreigners, yet must we not be too proud, occasionally to learn of them: we have undoubtedly more good farmers; but they have, perhaps, more public-spirited country gentlemen, who take delight in making experiments in husbandry, and afterwards communicating the result of their experience to the public: of these communications do the above Foreign Essays principally consist; and I am not ashamed to own, that I have received from them both pleasure and profit, or, in other words, entertainment and instruction.

I am, for this time, GENTLEMEN,
North of Maldon, Essex, Your very humble servant,
March 10, 1765. J. SMITH.

NUMBER LIII.

On some fine Flax-Seed raised in Ireland; on the State of Agriculture there, and the Advantage of the Drilling Husbandry in furnishing the Farmers with clean and good Seed-Wheat:

GENTLEMEN,

AS your work is in such high reputation on this side of the water, it is a matter of great surprise to me, that you should not have many correspondents amongst such of our Irish gentlemen as are improving their estates; and of these the number is, I assure you, far from being small.

Perhaps it may be thought, we are more lazy at writing than other people; yet I by no means know this to be the case: I rather imagine it proceeds from a certain modesty in my countrymen, who would not presume to be thought as knowing in matters of husbandry as are their fellow subjects the English. Be it as it may, I see in your collection no letters, except those from Mr. Irwin, in your First Volume, which I can distinguish to have been written by an Irishman.

I may, perhaps, some time or other, trouble you with an account of some improvements I am making in an estate I have

have in Connaught; but as I am yet only a young farmer, I shall delay it till I have an opportunity of saying something which may be quite worth the attention of your readers.

I am about to sow some land with flax-seed, which plant, you very well know, produces a staple commodity with us.

As Ireland is not rich in circulating cash, every attempt to reduce a balance of trade which is against us, must be laudable: now, we annually send abroad very large sums of money for the single article of flax-seed, most farmers thinking the foreign seed greatly preferable to what is raised in Ireland: I will admit that it generally is so; but this is not owing to any defect either in our soil or climate; for I have been long convinced, that nearly, if not quite as good flax-seed as any imported may be raised in this island.

Of this fact I have had lately still more abundant reason to be satisfied; for having occasion for some seed, I was recommended to Oran-house, near Roscommon, where I was informed I should find as good Irish-raised flax-seed as any that had been for some years imported.

I went there accordingly, and being received with all that politeness which Miss Irwin, the lady who lives there, is known to be possessed of, I was indeed greatly surprised to find that the flax-seed was, according to all appearance, in every respect as fine, heavy, and bright, as any foreign seed I had seen.

I found, on enquiry, it had been raised from some of the best American seed, on a rich fallow, under the direction of that very intelligent gentleman, Mr. John Irwin.

It gives me great pleasure, and I flatter myself, you, gentlemen, are not displeased to reflect, that the husbandry of this island is of late years so very much improved. The price of lands is risen more than would readily be imagined; for I know several estates which have been lately set to solvent tenants for near double the rent that was reserved by the old leases. This is an evident token that our commerce is also increased; for husbandry and commerce always go hand in hand, and if either of them is in a declining, the other cannot be in a flourishing state.

A few years ago our Irish farmers did not chuse to raise wheat on their land, because they found it difficult to get

a market for it; but since a bounty has been granted to such as bring corn to Dublin market, the face of the province of Leinster is changed, and there is now as fine wheat grown in it as any England affords, and in quantities sufficient to supply the inhabitants of the metropolis with bread at a reasonable rate.

Some gentlemen in this island have even made, and that with very good success, experiments in the drill-husbandry; and one in particular, near Dublin, has brought this method of husbandry to great perfection, the wheat he raises being greatly superior to any I have seen raised in the ordinary methods of husbandry: for this reason it is in great request for seed; and indeed for this use it has one quality which alone would be sufficient to recommend it, namely, that being frequently horse-hoed whilst growing, it is entirely free from the seeds of weeds.

I know that many objections are made by farmers against the new husbandry; and I am therefore sensible that it will be a long time before it can be introduced into common practice; yet surely, if a farmer knows his own interest, he should be persuaded at least to raise a few acres in this way every year to supply him with seed-corn: this cannot be any great trouble, and he will be sure to benefit by it, as his seed will not only be clean, but much larger grained; for the plant, by having space enough wherein to extend its roots, and by being constantly supplied with fresh nourishment, attains to the greatest perfection it is capable of.

I could say a great deal more on this subject, but that I am apprehensive of having already trespassed too much on your patience, and perhaps precluded the more useful piece of some other correspondent.

I shall therefore at this time only add, that I think it a great pity a large premium is not offered to the person who should raise in this island, in any method of husbandry, a certain quantity of flax-seed, equal to the best foreign imported seed; this could not fail having a good effect in every point of view.

I am, GENTLEMEN,

Your very humble servant,

AN IRISHMAN,

Dublin,

March 9, 1765.

NUMBER LIV.

A Scheme for making good, Part of a Road in Berkshire.

GENTLEMEN,

AS you have shewn a readiness to insert in your collection any hint towards an improvement in the public roads of this kingdom, I beg leave, by the means of your work, to recommend to those gentlemen, who have the care of the road leading through the town of MAIDENHEAD, a scheme for making good that part of it which reaches from the bottom of the hill to the chapel; a scheme feasible in itself, and which, I am confident, will answer the end.

If the defects in the pavement be well filled up with chalk, and a coat of chalk be spread over the whole pavement, and upon the chalk there be laid a coat of gravel; from the binding qualities of these two materials, when thus united together, and upon so good a foundation, there cannot be the least doubt but the road through that part of the town would soon become smooth and pleasant, scarcely ever be dirty in winter, or dusty in summer; and if an additional thin coat of gravel be afterwards laid on, as occasion may require it, the road will always be firm and good.

I am, GENTLEMEN,

B—d, Berks,
March 12, 1765.

Your humble servant,
T. S.

NUMBER LV.

Encouragements offered to British Subjects engaging in the Turbot-Fishery for the Supply of the Metropolis.

GENTLEMEN,

IBeg you will insert in your work the following notice, which has already appeared in some of the public prints in pursuance of a vote of the society for the encouragement of arts, &c. as it may be a means of making it more extensively known in some remote parts of the kingdom. Your readers will perceive it contains an offer of premiums

for such British subjects as may chuse to engage in the turbot-fishery off the British coasts.

Society for the Encouragement of Arts, Manufactures, and Commerce, Strand, March 20, 1765.

FOR every hundred turbots of five score to the hundred (not less in size than sixteen inches from eye to fork) caught with hooks and lines by British subjects, and brought to London or Westminster for public sale, between the first day of May, 1765, and the thirty-first day of August following, both inclusive, and in a saleable condition, five pounds.

Likewise for every hundred turbots under sixteen inches (and not less than ten inches from eye to fork) caught and brought as aforesaid, two pounds ten shillings.

The said premiums, of five pounds, and two pounds ten shillings, to be payable to the master of the vessel within one month after the above-mentioned four months.

But it is provided, that in case the general quantities taken during the time above mentioned, of four months, should be such as should be entitled on the whole to more than five hundred pounds, the society then limit the premiums aforesaid to that sum; and in such case the sum of five hundred pounds shall be divided in proportions according to the quantities and size of the fish caught by each vessel.

Any master claiming the above premiums, or either of them, shall, from time to time, give notice on his arrival, by letter to the secretary of the society, containing an account of the name of the vessel, the quantities and sizes of the fish caught, the time when, and the place where such fish were caught, with the names of all the crew who were at the catching of the said fish, and signed by the master and one third of them at least, and likewise such affidavits or other satisfactory proof as may be required by the society.

Note, British subjects, willing to engage in the turbot-fishery upon the premiums offered, may make use of foreigners, hired to instruct them in the method of catching the fish, not exceeding four in each vessel.

PETER TEMPLEMAN, Secretary.

The society also gives notice to the owners of any of the well-furnished employed in our cod-fisheries, or others, who may

may be inclined to attempt the introducing the turbot-fishery into the hands of British subjects, that by applying to the society's office in the Strand, London, they may be fully informed of the methods practised by the Dutch in that branch of fishery, and also see specimens of the several materials used by them therein, and be made acquainted with the proper bait, and where it may be procured on the British coast. They will also be informed where they may procure the several materials from English workmen, who have made specimens of the several articles of equal goodness with those of the Dutch.

The evident utility of these premiums is a sufficient recommendation to their immediate insertion by you, in complying with which you will also oblige a constant reader, and,
London, Mar. 25, 1765. A MEMBER OF THE SOCIETY.

N U M B E R LVI.

An interesting Proposal to the Public.

GENTLEMEN,

THE society for the encouragement of arts, manufactures, and commerce, of which we have the honour to be members, is, doubtless, one of the noblest and most useful institutions that ever was set on foot in this or any other kingdom: I am therefore not a little pleased at a resolution taken by the members, at a late meeting, of opening a subscription for raising a sum of money to erect a building suitable to the dignity of so noble a body of patriotic men.

The propriety of this step cannot but be evident to you; for which reason I request you will insert the notice, that has already appeared in some public papers, in your work, as I have not the least doubt but that many readers of the *Museum Rusticum* will be glad of an opportunity of giving a proof of their public spirit, by contributing to this subscription, which cannot but do honour to all who in any sort promote it.

Strand, March 18, 1765.

WHEREAS the Society for the encouragement of arts, manufactures, and commerce, find it expedient to erect a building, with proper offices and apartments, for carrying on the business of the said society; and whereas the

the annual contributions of its members are entirely appropriated to the payment of premiums, the salaries of officers, and other unavoidable expences; and no part thereof is intended to be applied to such building: it is therefore hoped that many persons (whether members of this society or not) will, from an hearty regard to the general good of their country and its colonies, cheerfully subscribe whatever sum they please, towards defraying the expence of procuring a piece of ground, and erecting a building suitable to the purposes of the society's institution.

With this view a subscription-book is opened at the society's room in the Strand; and also subscription-books are lodged with the following bankers, *viz.* Sir Charles Asgill and Co. Lombard-street.—Mess. Martin, Stone, Blackwell, and Co. *ditto*.—Mess. Batson, Stephenson, and Co. *ditto*.—Mess. Willis, Read, and Co. *ditto*.—Mess. Bland and Co. *ditto*.—Mess. Gines, *ditto*.—Sir Joseph Hankey and Co. Fenchurch-street.—Sir George Amyand and Co. Cornhill.—Mess. Castells and Whately, Birchin-lane.—Mess. Hoare, Fleet-street.—Sir Francis Gosling and Co. *ditto*.—Mr. Murray, *ditto*.—Mr. Child and Co. Temple-bar.—Mr. Coutts, Strand.—Mr. Drummond and Co. Charing-cross.

N. B. Such noblemen, gentlemen, and ladies, whether members or not of the society, who are desirous of being contributors to this laudable undertaking, but who, on account of their residence at a distance from this metropolis, or any other impediment, cannot have an opportunity of signing their names in any of the books above mentioned, are requested to signify their intentions by a line, directed to the secretary of the society, at their house in the Strand, directing him to insert their names in the said book, with the sums they shall think proper to contribute for that purpose when called upon.

PETER TEMPLEMAN, Secretary.

I could say a great deal in recommendation of the above scheme; but as it is late in the month, I fear you might not be able to find room for it immediately in your next month's publication: I shall therefore, as before, conclude myself,

A constant Reader of your Work,
London, March 25, 1765. *and a Member of the Society.*

Museum Rusticum, &c.

For A P R I L, 1765.

VOLUME the FOURTH.

N U M B E R LVII.

On the Culture of Burnet.

GENTLEMEN,

I Have been a reader of your tracts ever since their publication; and certainly they consist of many very instructing and rational thoughts; though, at the same time, I cannot help thinking, but that you receive, perhaps, rather too graciously, some superficial sentiments, and especially in agriculture: the proper knowledge in that science (as indeed in most others) is derived from experience; that of theory may often be pleasing, but is imperfect.

The great misfortune we labour under in that particular is the performance of husbandry in general, or even the care of it, being committed to the lower class of people, neglectful in observing the method and culture needful to be pursued in different soils and seasons, and unable to

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communicate,

communicate, in order to ascertain a tolerable knowledge in a practical course of husbandry.

For my own part, I have now pursued it for some years with pleasure (and lucky I have been in servants, which is often mentioned as an obstacle); and often have I indeed lamented, that agriculture was so much neglected by persons of fortune and abilities, but now rejoice to find so noble and rational a science countenanced, encouraged, and pursued.

The burnet seems to be in fashion at present, though your Warwickshire correspondent (see page 33. of this Volume) condemns even common hay which is mixed with burnet growing spontaneously. I would just ask that gentleman, whether he is certain it is the real species of burnet recommended by Mr. Rocque?

And as to that gentleman mentioning M. de Voltaire's retreat * as famous for tender ashen branches being given to horses, I could inform him it has been frequently practised (and especially in hard winters) a few miles only from his own county, and particularly in Wales.

Burnet I sowed last April (which is the proper time for that work): one part is now untouched, only the seed collected; the other part has been eaten down, contrary to Mr. Rocque's directions.

I purpose sowing more this spring; a quantity also with grain, barley I believe, which is contrary too to Mr. Rocque's opinion: however, I have no doubt of succeeding; otherwise it would be much objected to by the farmer, as one year's profit of the land will, in their language, be lost, or at least protracted; which they cannot conveniently reconcile themselves to.

I shall suspend my sentiments at present in regard to the success of burnet, notwithstanding I have sowed a good deal of it.

I make an excursion most years, and really think Shropshire abounds with as rational and reputable good farmers as most counties I have seen, and therefore probably

* Geneva.

bably may one day give you my thoughts of our manner, culture, &c*.

I am, GENTLEMEN,

Your humble servant,

Shropshire, (near Shrewsbury)

F. R.

February 21, 1765.

P. S. The burnet-seed sold by Mr. Rocque produces two different sorts of burnet; the one is much greener than the other †.

NUMBER LVIII.

An Account of an Experiment made of sowing Timothy-Grafs on a wet Hill.

GENTLEMEN,

I With I could give you a more pleasing account of my burnet and timothy grafs than what I am at present able to do; yet I think the burnet may answer which I sowed upon the same soil as is recommended for lucerne: and, as you have desired it, you may depend on having an account of the progress of them, whether well, ill, or indifferent, with a particular account of my sowing the burnet, and the management †.

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The

* This gentleman cannot oblige more than by sending us, for insertion, an account of the methods of husbandry practised by the Shropshire farmers, of whose knowledge we have often heard, and whose hospitality is well known. O. H.

† We could wish our correspondent had informed us whether there was any difference in the colour of the flowers, or whether the two sorts had any other distinguishing characteristics, as we were inclined to think that the variation was merely accidental. See note under page 139. Vol. III. E.

† This promise made by our correspondent lays us under infinite obligations, as it may be a means of obviating some difficulties started against the culture of burnet. We take the liberty of requesting our correspondent to be particular in his account, in order that the public may know not only the effects, but the causes to which they may be ascribed. E. R.

The timothy-grass was sown on a hill, instead of a low, marshy, damp soil; but notwithstanding its being a hill, it is so wet in the winter, that a horse can hardly pass over the greatest part of it.

It is a field of about ten acres, and as even to the eye almost as a bowling-green. The soil is a poor black sand at some places, and white at others, mixed with small flint stones. Under this is a kind of sand, black and white, so cemented together, as to make it almost as hard as terras: this I apprehend to be the cause of the land being so wet, the water not being able to penetrate deep into the ground.

The product of it was goss, broom, brakes, and heath; and it made such a despicable figure, that I could not endure the sight of it in this rough condition.

I had it cleared from the goss and broom, and ploughed it: finding the mould so very shallow, I was afraid of denshiring it, but believe, if I had, it would have been better, as the heath at some places is scarcely rotted, though I have now ploughed it these five years. However, as some part of it was clear, I consulted Mr. Rocque, who thought it would do, especially as I had limed some of it.

I therefore took a resolution to try about an acre and a half, the greater part of which was limed, by way of experiment, and had it sown the seventh of last November, being disappointed of receiving the seed a fortnight sooner by the person who was to get the seed for me from Mr. Rocque.

I perceived, in about three weeks, something very thick on the ground; but whether it was timothy or not, I could not tell, as I knew not what kind of leaf it came with: whatever it was, a frost happened, and it disappeared*.

This

* We apprehend this gentleman's failure of success proceeded from his late sowing, as the plants had not time to get any

This land at spots now produces a kind of grass much like the description of the timothy; and indeed, as horses were so fond of it, I was in hopes of its being that. Mr. Rocque desired me to send him a little of the seed, which I did; but it did not prove that.

Where I limed, there seems now a pretty deal of grass; but whether it is the grass natural to that soil, or timothy, cannot say, but believe the former.

In this present Volume of your *Museum Rusticum*, I observe a letter from a country gentleman, Numb. XXXI. page 141, to desire your advice about an acre and a half of lucerne being over-run with couch-grass. If it is not too far gone, I am of opinion, that if every plant was well dug about with a four-prong fork, which will go about eight inches into the ground, as the heads of the plants will pass through the fork, the couch may be got away from the plants (this I have had done *); and the ground between the rows once well ploughed; after which a prong-hoe, which is used in hop-grounds, would effectually clear the land.

I am, GENTLEMEN,

Your most humble servant,

March 7, 1765.

The KENTISHMAN.

any degree of strength before the frosts came on. We recommend to our correspondent's attentive perusal, Mr. Rocque's hints on timothy-grass, inserted page 181. of this Volume: he will there find that what was sown by Mr. Rocque in November, did not succeed so well as what was sown in September and October. E. R.

* I mean only the use of the prong-fork that I have done my land with, being light: it wants no ploughing between; hoeing only does it, which I have done every time it is cut, and this with a common gardener's hoe.

NUM-

NUMBER LIX.

General Thoughts on Roads and Wheel-Carriages.

GENTLEMEN,

AS the thoughts we here send you have been a part of our amusements in various avocations from family business, if you conceive them worth the attention of the public, you are at liberty to insert them in your work*.

Introductory Definition.

THAT we may be understood, in what we write on the subject, we hope the candid will allow us the following *leading principles*, or *maxims*, without searching for, or even expecting a perfect style or elegance of expression.

I. *That all carriages go easier down hill than on level ground, easier on level ground than up hill, and harder up hill, as the sign of the angle of ascent, (or nearly so) till the angle becomes about 20° . ; or till the perpendicular ascent may be about one third of the base line, at which time no power can be said to draw a load up the same smooth, hard plane that itself may stand upon †.*

II. *That sandy roads (and such sort of fine gravel as may be considered as next a-kin to sand) are, generally speaking, the most pleasant and best roads we have. But, though in general they may be so, yet that meaning is far from being universal ; for it seldom happens that the roads under the general idea of sandy roads will bear much work in long,*

* We are much obliged to the writer of this piece, and hope to hear from him frequently on this or any other subject. E. R.

† By smooth and hard, is meant such a condition as a mason may be supposed to leave the face of a stone in from his ax or chissel, or when the common roads are in their hardest and smoothest condition.

long, continued, gentle rains; therefore such roads must have breadth, in proportion to the work they are expected to bear, which must ever be at the discretion of him or them who have the directing power.

III. *That pavements can never be considered as commodious roads, though often to be preferred in particular places and cases.*

IV. *That wash roads (however applauded by some) are rarely without notorious exceptions; though, in particular places, they too may be useful and necessary.*

V. *That roads whose surfaces are chiefly composed of hard, rough gravel, replete with loose pebbles, (or other irregular large stones) though they may be comparatively good in dirty seasons, cannot be esteemed the most eligible roads, whether considered under saddles, traces, or wheels.*

VI. *That broad wheels wear out roads, and themselves, much less than narrow ones; and, (cæteris paribus) in drying seasons, even consolidate the surface of roads.* This is not only demonstrable by the established laws of mechanics, but, we presume, sufficiently proved by the last ten years experience on the great roads round the metropolis for about an hundred miles distance; but we apprehend, as there are many intervening roads, that it doth not yet amount to half the carriage of the kingdom.

VII. *That great inconveniencies arise from the present manner of using broad wheels, viz. by their making the ruts or tracks too narrow and irregular at the bottoms for horses to travel in; for though this inconveniency may, in some measure, vanish near London, and in other great turnpike-roads; which may have obtained a majority of broad wheels, by means of saddle-horses, drift cattle, with coaches, chaises, and a perpetual attendance of labourers, supplied by large tolls, yet is it an extraordinary grievance amongst farmers, (especially those of small farms in cross roads) and where the country proves clay, marl, or rich or spungy soil, and but thinly peopled; and yet much wheel-carriage necessary, and no turnpike; as near large and heavy manufactories, and mines of coal, lime, lead,*

lead, &c. for when the ruts get any considerable depth, the cattle are often thrown down, and in general *lamed by insensible degrees* from the uneasy form of the path they are obliged to travel in; for that the broad and narrow going both in the same ruts is intolerable to the broad ones, as well with respect to the ruts for the wheels, as the paths for the cattle to walk in; and where they have not that small relief by the difference of tolls, (or even where they have) we humbly conceive may yet claim some farther notice and assistance from legislative wisdom, to extend that mode of preserving roads, *by means of broad wheels*, to the utmost verge of Great-Britain, as it must be allowed the best and most general project ever yet practised in the kingdom for that purpose.

VIII. *That to remedy the impediment arising from the present way of using broad wheels, is a province for a superior wisdom and authority*.*

Nor can we help wishing to be indulged with a sight of our humble opinion in print, (conceived so long since as the year 1755, and propagated amongst our associates †) which, in plain truth, amounts to little more than the finding a means to have one axle, of all four-wheeled carriages, longer than the other; so that the inner distance of the head of one pair of wheels be less than the outward distance of the other; at least two feet, or perhaps two feet two, four, or six inches; and then it would be less material what breadth the wheels themselves were of, so that their tread be flat; or if one pair were two or three times the breadth of the other, provided the whole breadth of the four wheels be at least two feet, or other legal breadth, and the track made by such waggon twelve, thirteen, fourteen, or fifteen inches broad, (and words can explain such liberty without danger of litigious confusion.)

If

* Yet a certain method is humbly hoped from the well-collected opinion of the whole kingdom in parliament assembled.

† And hinted in a ludicrous petition to the Editors of the Gentleman's Magazine, but was never touched by the press that we know of.

If carts were to have the distance of theirs either equal to the greatest or least tread of the waggons, it would generally help to preserve and commode the roads, and the horses path, and would have its use to different and particular people and neighbourhoods.—Query, If not better to have carts with broad wheels go only in the middle of the waggon-track, or other difference in the tolls or number of cattle drawing? Perhaps no more than two, if under an augmented breadth.

IX. *That the attrition, or friction, between the common wood axles and the boxes of the wheels, is not more than one sixteenth of the whole draught*.* The projector of a late project, under the affected and pompous epithet of *Friction Annihilated*, having allowed, and rationally proved, that his project could never amount to more than about half a horse in a team of eight; and though that projector had flattered himself that his project came as near the total preclusion of that friction as the nature of things would admit; yet was he forced to acknowledge too, that his invention, when applied to carriages, must have some allowance further for its own weight, which might be considered as goods to be carried for nought†.

Though this impediment of weight is a very material one in the iron arms now in use, it is amply compensated by oil instead of greasing, and the possibility of drawing greater loads than wood could bear without firing, or retarding the speed of business.

X. *But there is another sort of friction, or rubbing, relating to wheel-carriages, of much higher import than that of the axis, especially in the narrow wheels, which is, their rubbing against the sides of the ruts when they get of any considerable depth; which must happen from various causes; as, first, whenever a wheel follows another thinner than itself, if both happen to tread so as to go exactly in the same track, this friction*

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will

* But the attrition, or rubbing of the sides of the wheels in deep ruts and rough stoney roads, is indefinitely more.

† See the Chronicle, and other papers, about August or September, 1758.

will be on both sides of the following wheel, before it can touch the bottom of the rut made by its forerunner : hence the edges of new wheels wear off much faster than the edges of old ones ; and if treed a small matter wider, or narrower, the impediment is greatly encreased, which impediment frequently happens from the imperfection of workmen ; a circumstance not to be avoided.

Whenever the bottoms of the ruts, and of narrow wheels especially, are composed of large rough stones, some will get more on one side and some on the other, as on rough pavements, but generally much worse in common roads, though less conspicuous : the wheels are perpetually rising and falling from one stone to another, not only from the summit to the pit-hole immediately before it, but when the edge of the wheel happens a little beside the crown of the stone, probably slides side-ways off such stone, with a forcible shock, into the collateral depression ; whilst every such slip wears off something from the wheel, something from the stoney road, and some labour from the cattle drawing such load ; and at every such slip the very stone from which the wheel hath slipped rises more or less in proportion to the shock, till at length that very stone is worn out, or forced above ground, from whence probably it falls again under the pursuing wheels, as if on purpose to be ground to an impalpable powder, by the most facile means that art can contrive, and from whence wind or water conveys it into one of their own fluid elements.

XI. That the sort of friction, rubbing, or grinding, from the edges or sides of thin wheels, is much greater than in the broad ones.

Hence, it is presumed, the broad ones must last longer in proportion to the expence, and require less power to draw them with the same load.

XII. That high wheels will always travel easier than low ones, till their own weight becomes an incumbrance, equal to the difficulty of surmounting obstacles by their shorter radii.

Now, we apprehend this incumbrance of the weight of wheels only will encrease nearly as the squares of their diameters :

diameters: hence, a wheel of double the height would have quadruple the weight; one of three times the height, nine times the weight, &c. but it may likewise be observed, that though the small wheels are capable of bearing the same trial of strength as the large ones at first, yet certainly the large ones must be presumed to wear longer, as the points that must come in contact with the road, to wear them out, are less frequent in proportion as the lineal dimensions only, (being of the same breadth) where they tread the earth.

We apprehend too, that mechanics and experience will nearly coincide in the proof, that wheels for carriages, to be drawn by horses, and made of such timber as England most aptly produces for the purposes of heavy loads, will be found to be somewhere between four and six feet diameter.

XIII. That the expence of similar wheels may be considered nearly in proportion as their weights. Lower wheels, however, might be more useful if the roads were more even in their general surface; but the difficulty of surmounting the common obstacles of roads must prevail, for some time at least, against very low wheels.

N. B. The weight of wheels is not quite so pernicious as if the same lay in any other part of the carriage, or in the goods to be carried; but the difference is no more than that they add no friction in their boxes, which (by No. IX.) is only one sixteenth part; and that they, in some measure, prevent the overturning of high loads, by keeping the centre of gravity of the whole something lower than it would be if the wheels were lighter.

It is observed, that gentlemen of speculative faculties, and those who practise the carrying business, generally disagree in positing the goods in the waggon.

The former prove by their art, (experimentally) that the load draws the easiest when the heaviest part lies upon the hinder (as the larger) wheels.

But as these accurate experiments, and their conclusions, are generally drawn from regular plains, it is

presumed that they frequently over-look that great advantage arising from the strength of the thill-horses when exerted in lifting the low wheels out of their hole, which may be more than equivalent to the height of the hinder wheels; but this being an undeterminable point, may be fruitlessly contested for ever.

Though a late author (Mr. Bourne) notwithstanding the ill success of his public experiment near London, has certainly merited greatly of mankind by his new-invented waggon, and his treatise wrote on the subject of roads in general; yet it is much to be feared that several objections must arise in practice, which he was not at that time aware of.

As first, it is presumed that the lowness of his wheels are too far in the extreme, if he is not really mistaken in his reasoning upon their surmounting of obstacles, which may often be struck or driven before the wheels with a sliding motion before they can mount the summit of such obstacles; in which case the wheels of two or three times the height would have greatly the advantage.

This great cylindric length would likewise have the same kind of impediment, in every turning, as the conic wheels would in going strait forward, as he has rightly observed.

Though a certain condition of roads may, in particular times and places, allow a preference to his method; yet these small, long cylinders can scarcely ever be universally advantageous.

If the load be pretty high, and most over the two wheels that are nearest together, it will often endanger the overturning, as may be conceived from a stool or table standing on three feet.

Yet what Mr. Bourne has said upon roads in general may be worth legislative notice, however varied for simplicity's sake.

NUM-

NUMBER LX.

Queries sent into France about the Seed la Lucerne ; extracted from Hartlib's Legacy, and sent to Mr. Rocque by the Reverend Mr. Lambe.

WHEN one N. N. was last in France, being in discourse with Dr. D. about saintfoin, he was then told by Dr. D. that, for the improvement of barren grounds, there was (in those parts of France about Paris) another seed, that did far excel saintfoin ; and that the name of that more excellent seed was *la lucerne*.

I am desired by a friend of mine, (to whom N. N. related this passage of Dr. D.) that, by your kindness, he may be spoken to of this lucerne : and his directions desired, Where the said seed is to be had ? For what price ? How much is usually sowed upon an English acre ? What time of year it is sown ? Whether it be sown alone, or with any other ordinary corn ? And with what corn ? And with what kind of land it best agrees ? And, finally, with other particulars he can direct, more than is here set down.

Answer to the Queries from Paris.

I have been with Dr. D. about lucerne ; who tells me that it groweth best upon wettish grounds : that the best time of sowing it in England will be in February, when oats are sown ; with the which also it may be sown, but best alone : that to the sowing of an arpent, which is much the same with an English acre, there will go twelve or fifteen pounds of the seed ; the which useth to be sold here at eight or nine sols the pound.

More Queries concerning Lucerne.

I desire further to know, what kind of wet grounds are best for it ? whether moorish or clay ? whether poor or rich ?

rich? Whether it must be sown yearly, or whether it will continue over a year in the ground? and if more than a year, then how many years it will continue without being new sown? Whether it be only good for meadows, or for pasture? and, if for pasture, then whether the sheep or cattle be suffered to go upon it; or whether it be carried off green, as the clover grass is in Flanders? Lastly, for what cattle it is most proper?

Another Answer from Paris.

I thought to have sent you nine pounds of the seed of lucerne, for sowing of three acres; Dr. D. having told me, as heretofore I told you, that three pounds will sow an acre, or arpent: but, as I was going about it, I met a gentleman, an acquaintance of mine, who some years since (but unknown to me hitherto). hath had some acres of meadow of lucerne upon his ground; to whom having casually spoke of my business, and told him all that Dr. D. had told me about lucerne, he answered me that Dr. D. was most grossly mistaken in the quantity of seed required for the sowing of an acre; and that it would not take up three pounds, but two whole sacks, each sack containing the full load of a strong porter: at which rate the quantity of seed required for the sowing of three acres, will fill a great dry-fat; the sending whereof by land would come to excessive great charges, and therefore necessarily to be sent by sea, in my opinion.

You will be pleased to impart these things to your friend, and to let me know his final resolution upon them; the which shall be faithfully accomplished by me: and, in the mean while, I will get him a full and perfect answer upon all his queries; not from Dr. D. whom I dare trust no more in this business, having found him guilty of such gross mistakes about it; but from that other gentleman, who told me he could resolve most of those questions, but that, to be surer, he thought it best to confer first with his farmer about it. You make apologies for putting me upon these enquiries; but I pray you to believe,

lieve, I shall at any time most readily and chearfully serve you to the best of my power, for you or any of your friends.

The last Answer concerning Lucerne.

The information I have got from my friend about the lucerne, being a very particular one, and containing a very full answer to all the questions propounded by your friend, is as followeth:—It requireth a rich ground, but somewhat loose and light; so as a tough clay, and such other stiff grounds, are not fit for it.

The ground must not be over dry, nor over moist, but in a mean, yet somewhat more inclining to moisture than to the contrary.—It must be ploughed three times; the first time in October, and the second and third, toward the spring.

Naturally it doth not love dung, and cometh much better in a ground that is sufficiently rich of itself, than that which hath been enriched by dunging; and where dung is made use of, it must be very stale and rotten, and long before the sowing time. It cannot endure the cold, and therefore must not be sowed till the cold weather and all the danger of it be past, viz. about the beginning or middle of April.

The quantity of the seed is the sixth part of corn that the same ground would require; so as only one bushel of lucerne is to be sown on that space of ground that would require six bushels of corn. It must be carefully weeded, especially in the beginning; and, to the end that it may take the more firm root, some oats must be mixed with it, but in a very small proportion.

It is to be cut as soon as it beginneth to flower; which (in the hot countries, Provence, Languedoc, and Spain) it doth five or six times, and some years seven or eight times in a summer; but in this climate it useth to be cut twice a year, about the end of June, and about the end of September. Being cut, it must be turned very oft, that it may dry the sooner, and be carried off the ground

ground as soon as may be, and dried. It must be kept in close barns, being too tender to be kept in ricks open to the air, as other hay.

It is good for all kinds of cattle, kine, sheep, and goats; and as well for the young ones (calves, lambs, kids) as for the others; but above all, it agreeth best with horses. It is much more feeding than any other hay, inasmuch as any lean beasts will soon grow fat with it; and to milch beasts it procureth abundance of milk: but it must never be given alone, especially to beasts that have not been long used to it; but must ever be mixed with straw, or with some other hay; for otherwise it overheatheth them, and filleth them too much with blood, and that so suddenly, as it greatly endangereth their health and their life too; which it doth principally to kine, to whom it is more dangerous, if too plentifully given, than to any other cattle.

After your last cutting, you may let your cattle graze on your lucerne fields, and that all winter long, until the beginning or middle of March. Of once sowing you will have your meadow continue good for ten or twelve years, and until fifteen; and after too it will still continue to bear, but the herb will then notably decay in goodness.

Kine must never eat of this herb green, but only dried, and that moderately too, as hath been said: but horses eating green of it in the spring are purged thereby, and grow fat by it in eight or ten days time.

If one desire to have of the grain, one may let such a proportion of the meadow as one will grow up to seed, after the second cutting, any year except the first only; and when the seed is ripe, the tops of the herb, with the pods wherein the seed is enclosed, must be cut in a dewy morning, and put into sheets, for fear of losing the seed; which must be beat out with flails upon the same, when well dried: and afterwards the remaining part of the herb must be mowed close to the ground; after which it continueth to sprout out again, after the usual manner.

The

The hay of it will keep good two or three years ; and one acre is sufficient to keep three horses all the year long.

Postscript to the last Answer concerning Lucerne.

S I R,

The gentleman who had given me the note about the lucerne, hath told me since two particulars more, which he had forgot to put into it ; the one, that not only to other cattle, but even to horses, (with whom that hay agreeth best of all other beasts) it is not to be given but in winter ; because that, in the summer, it would too much heat their blood : and the other, that this hay must be perfectly well dried, before it be carried off the ground, and to that end turned very often ; because that being put up with the least moisture, it will quite spoil, much more than any other hay.

Now these, and all the other particulars which I have had from that gentleman, have been confirmed to me by many others : and yet within these two or three days, I met with a physician of Rochelle ; who, assuring me that lucerne was very common in his country, made me a relation of it, agreeing with the former only in these three points, viz. that of once sowing it will continue ten or twelve years ; that it is cut twice a year, serving for pasture afterwards all the winter ; and that it wonderfully fattens all kind of cattle : but very much different from it in all the others, and in some of them point-blank contrary to it ; for he saith, that it is to be sown in the beginning of March ; that it desireth a temperate ground, rather dry than wet, and no ways fat nor clayish, but stony and gravelly ; that it need not be mixed with any other hay, but may be given alone, and all the year long, in summer as well as winter, not only to horses, but to cows and other cattle. He addeth, that the proportion of seed is the charge of a porter for four arpents or French acres. — Which particulars I thought good to write unto you, that your friend, comparing them with the others,

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might

might make his best profit of them : and this Rocheller, who hath lived three or four years in England, thinks that the lucerne will come admirably well in that country.

N O T E.

The meaning of these words, (page 255. line 24.)
 “ The quantity of the seed is the sixth part of the corn
 “ the same ground would require,” is this ; that whatever quantity of wheat or barley an acre of ground would require, you must take but the sixth part of that quantity of the seed of lucerne ; so as that ground, which for its sowing requires six bushels of corn, doth require but one bushel of lucerne-feed.

An *arpent de terre* (which how much it is in English measure, Cotgrave’s Dictionary will perfectly tell you) requireth ten pounds of that seed, as several grain-sellers, of whom I went to enquire for it, have unanimously told me ; the seed being exceeding small, and to be sown wonderfully thin.

As for saintfoin or holy-hay, I have seen it grow here about Paris, in several places, in rich fat grounds, and those both high and dry, and others low and marshy. It is cut but once a year, much about the same time as other hay ; and a great deal of the seed is required for sowing the ground with : being once sown, it lasteth ten or twelve years, as well as medica or lucerne, wherewith also it correspondeth altogether in its virtues and uses.

Hartlib’s Last Legacy to his Countrymen, London, 1651.

I have no more room left, than to tell you, that I shall be always glad of an opportunity of shewing how ready I shall be of obliging Mr. Rocque. I am,

Your’s most sincerely,

D. LAMBE.

NUM-

NUMBER LXI.

On the great Advantages of cultivating Lucerne in Mr. Rocque's Method.

GENTLEMEN,

I Troubled you the beginning of last year with a letter on the subject of lucerne, which you were so obliging as to insert in your First Volume, page 339.

I was then, and still am, an advocate for Mr. Rocque's method of culture in preference to Mr. Miller's, as far as regards this plant; and that for this plain reason, because I imagine the farmer will be much more likely to adopt the first than the last; and the culture of lucerne can produce very little advantage to the nation, unless it is generally adopted by the common farmers.

My reason for troubling you, or your readers, at this time, is to remind you, that Mr. Rocque's small tract, lately published by Mr. Davis in Piccadilly, contains some particulars respecting lucerne which were not noticed in my former letter, and therefore may, with great propriety, be now laid before your readers.

The first of these particulars relates to the manner of sowing the lucerne; and in this Mr. Rocque differs widely from Mr. Miller, as he thinks it should not be sown without corn; but I will give you Mr. Rocque's own words, as they carry great weight with them. "You must not sow lucerne without corn, unless your spot of land is too small to use a harrow in: in that case, you must sow it in drills, and keep it very clean hoed.—The drills for such small spots are to be ten inches distant; if wider, it lodges in the drills. The reason I recommend sowing corn with it, is, to prevent the weeds choking it; but, you must sow only for half a crop; otherwise your corn will be apt to destroy your lucerne, especially if it proves a wet season, and your corn is strong. If there is no

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corn

corn sown amongst it, you must be obliged to mow the weeds, and run a chance of cutting the lucerne with them : and, being very sappy, you cannot imagine how detrimental it is to bleed it, when young ; but, when the corn will be fit to mow, the lucerne also may safely be cut."

As the duration of lucerne has been a question long agitated, and not, that I know of, finally determined, it will not be amiss to mention a fact related by this able cultivator, as it will be an encouragement to the planters of lucerne.

"As to the duration, it will last as long as the ground is kept clean. I saw some at Mr. Middlemar's, at Grantham, in his garden, that was forty years old ; and it was very fine. To keep it thorough clean, you must harrow it every time it is mowed ; and, if requisite, at Michaelmas, and in February and March. If you once leave it foul, it will be very expensive to clean. You must make use of the drill-plough ; but let the harrow be ever so strong, you need not fear its hurting it."

In my letter to you above mentioned, at the bottom of page 343, it is observed, that in preparing land for lucerne, a trench-ploughing would be of great advantage ; but in the piece lately published, Mr. Rocque says, "In case you are not well acquainted with the state of your ground, you must trench-plough it twice, according to the directions for ploughing, which are in my *Hints upon Burnet* ; whereby the roots will run down the the sooner out of the reach of dry weather : and if the soil, that is turned up, be ever so sour, future ploughings, harrowings, and manurings, will sweeten it sufficiently for the reception of the seed."

Mr. Rocque adds, in this place, that "Lucerne will grow very well in clay land, with proviso the ground works well. The difficulty in these lands lies in the harrowing ; in dry weather the ground being so very hard, the harrow can do but little good, unless you take the season between wet and dry to harrow it, which you certainly must."

At the top of page 344, it is observed, that in the province of Languedoc, in France, the inhabitants mow their lucerne when it is six or seven inches high, in order to kill the annual weeds. Of this practice Mr. Rocque now says, "By my own experience, I find they are in the wrong; for it bleeds it, so that the plants make but little progress when cut so young, and are a long time in recovering it. It ought never to be cut but when in bloom."

A great many imagine that the seed might profitably be saved in England; but Mr. Rocque is of a different opinion, and indeed I am inclined to join with him in this respect, as in this island it is at best but a precarious crop, and can be imported so cheap, that the seedsman can afford to retail it at nine-pence *per* pound, at which price it was this year advertised. Mr. Rocque's observation on this point is as follows. "In hot summers the seed may be saved in England, but not from the first growth, that being generally too rank, and subject to rot at bottom: though I think it is needless attempting to save any of the seed in England; for, in the year 1761, which was a very fine summer, I tried to save the seed of the second growth, on light land, but made nothing of it; not saving above thirty pounds of seed, upon four acres and a half. I also tried, that same summer, to save some off stiff land; but that proved still worse."

I have only now to give you Mr. Rocque's thoughts on the value of this grass, which, in my opinion, deserves to be preferred to almost all others.

This practical cultivator says, "I have already observed, it ought not to be cut but when it is in blossom; and that is but three times a year; but after mowing the third crop, you may, instead of mowing the fourth, feed it: but when frosts come, you must take your cattle off; because there are always young shoots, which would be bruised, if the cattle were not taken off. If it is rank in September, it is dangerous for cows, being too feeding; but turn horses and sheep upon it. As there is no
grass,

grafs, as has yet come to our knowledge, which gives the cows so much milk, you may let them graze about an hour, at most, in the afternoon, when the dew is off. When made hay, it is likewise the best for milk : wherever it is much cultivated, they prefer it to all other kind of hay.

When I was at Monosque, a city in Provence, which was about twenty-seven years ago, the carriers fed their horses upon it, preferably to any other, without corn; and the mules looked fat and in fine order. Six mules which I hired there, to carry my seeds at Nimes, fed on nothing else, and yet carried their load all day long, without unloading. They have the custom of hanging little bags to their horses or mules heads, wherein they put lucerne, on which they feed as they go.

It is acknowledged by all connoisseurs to be the most feeding of all pasture, either green or in hay. I trust not barely to report, but have experienced it to be so myself. I had colonel Vernon's horse sent to me from the country, in a very poor condition; and, in fourteen days, he was in very good order. The colonel was surprised to see how he had thrived in that short space of time.

Many are apt to condemn it, but it is for want of knowing its good qualities. It has been introduced, it is manifest, for a long series of years; as appears by that excellent tract at the head of this*, which is punctually drawn from the original: to which had due attention been paid, our modern writers would not have drawn the public into so many errors. It had been so little noticed, that one and twenty years ago there was not two hundred weight of lucerne grafs seeds to be sold amongst all the seedsmen here in London; and I had much ado to re-introduce it; but now, within these three or four years, there is a prodigious consumption of it.

One Mr. Beadle, a farmer in Kent, has fourteen acres of it, for which he had a premium. When I called upon him, which was in the beginning of May last, he had mowed his lucerne, and sold it upon the spot, for three pounds

* See the preceding article.

pounds or three guineas a load. I blamed him for cutting it so young; but he told me he was compelled to it, to get fodder for eight hundred head of sheep, that he had; but that, a little while after, it grew so fast, that he could turn his sheep upon it. Those that bought his hay must needs be well acquainted with the goodness of it, to fetch it on the spot, though they were ten or twelve miles distant.

It is not foggy, like clover or tares. Horses will work with it green, as well as with hay or corn: they do not sweat with it, as they do with other green fodder. I have been told, one of our post-masters kept his horses both winter and summer with it, and that his horses were the best on the road. They object, the hay of it is difficult to make: it is no more difficult than clover. All hay is difficult to make in wet weather: but when it is a bad season to make hay, do as Mr. Allen does; put it up in ricks when dry, and between every bed of hay, of any kind, put a layer of salt, and that will recover all the damage the rain can have done.

I have done it myself, this very last year, with a rick of burnet: to about twelve loads I have put a sack of salt amongst it; and every time my horse comes near it, he eats it very eagerly, though he can get but at the outside of it. It will keep in ricks as long as any hay.

Multitudes at present are pretty well acquainted with the excellence of both these grasses: but if any doubt the truth of what I assert, let them take the trouble to enquire into it, of Mr. Shennelly, the tobacconist, at Houndsditch; to whom I have sent a load of lucerne, and am to send another load of the same, and half a load of burnet hay.

Those who are not satisfied with the theory, may be convinced of the practical part, by seeing a field of mine of lucerne, of four acres and a half, at Battersea, and the manner of working the harrow."

From what has been said on the subject of lucerne, I hope your farming readers will be induced to adopt the culture

culture of it; as, if they are not blind to their interests, they cannot but be convinced of the many advantages which would result to them from so doing. Mr. Rocque's method of cultivating this plant differs but little from the manner in which they raise clover; and the profit to the landholder will be abundantly greater.

I shall not, at this time, take up any more room in your pamphlet, as I may, perhaps, already have encroached, though you must acknowledge the subject of my letter to be important.

I am, as before, GENTLEMEN,

Your humble servant,

London,

A MEMBER OF THE SOCIETY.

March 27, 1765.

N U M B E R L X I I .

Reasons why Farming so often proves unprofitable.

GENTLEMEN,

WHEN I began farming, I was warned from expecting profit, by two different sets of people; First, by gentlemen, who assured me nothing was to be made by it, but much, probably, would be lost, if I had rent to pay; since few, who even farmed their own land, could do more than make their rents, and keep their horses, by their farms.—Secondly, the farmers, who have a mortal antipathy to what they call gentlemen farmers, and are sure to laugh very wisely at those who pretend to know any thing of the matter, treated my idea of attempting it without *losing* money, as ridiculous.

No great encouragement this to begin; but my inclination to a country life, and my aversion to the mere idle enjoyment of it, overcame these prudential cautions; and I engaged in farming, with the expectation of, at least, *losing* nothing by it. An indolent practice of business was
not

not my scheme: those who would pursue farming to advantage, should adopt the sentiment of Statius:

———— *Steriles transmissus annos,
Hæc ævi mihi prima dies, hæc limina vitæ.*

Whenever the business of husbandry is followed with attention and industry, I am very well convinced it will prove profitable, barring particular exceptions: but there is scarce any pursuit in which more money may be lost, through ignorance or negligence.

The rent of a farm is a very material article, though not in this country so often the cause of a want of profit, as commonly imagined.

In some parts of England, I know the rents are screwed so high, that the tenants are little better situated than day-labourers: but this is not the case in Suffolk; rent does not bear so hard on the farmer as his standing expences.

Men of tolerable experience, who have seen any parcel of land at different seasons of the year, will judge pretty exactly what rent it is worth; and, except in very little farms, the property of people in low circumstances, I know but few instances of a want of success, owing merely to the rent.

The reason is frequently thrown on it; but a near examination generally discovers some bad management, or accidental circumstances, to which a failure may be attributed, as well as a high rent: however, some exceptions there must be to the best-founded assertions.

The stocking a farm is a point of great importance, and requires as much judgment and foresight as any other point in husbandry.

The bad success of great numbers is owing to their not having a sufficient sum of money to begin with, which inevitably involves them in difficulties, and reduces their profit on every article of their produce. Their farms are under-stocked; they sell at a constant disadvantage; their

fields are not half cultivated; and in a short series of years, unless some lucky hit sets them up, they grow poor, in spite of all possible industry, judgment, and application.

Even a low and easy rent will seldom remedy the want of money at setting out.

The want of judgment, in proportioning the quantity of each particular kind of stock to the quantity and nature of the lands of a farm, is also attended with great loss.

For instance; if a farm requires four horses, or two ploughs, and the farmer keeps only three, or a plough and a harrow, his fields cannot be sufficiently cultivated, even according to the ideas of culture common among farmers; and, of course, in a few years his lands must be in very bad order, to his great annual loss.

On the contrary, to overstock himself with horses, is to keep what will inevitably eat him out of house and home: the expenses attending them are very great, and if they are not kept constantly at work, their owner must necessarily lose by them. But it will not be amiss to explain myself more particularly on this head.

I am speaking at present of the practice of farmers, some of whom overstock themselves with horses, without giving their lands extraordinary stirrings on that account. If a farm, which commonly requires three horses, has four kept, and is consequently ploughed and harrowed proportionably more, the farmer will be no loser by his fourth horse; but the case is very different when he is kept without being worked to the best advantage of the farm.

It is not to be at once perceived how much is lost by not having the number of horses proportioned to the land; nor can this always be done.

A farmer may find it necessary to keep four horses, and when he has got them, it is a chance but he could perfectly well manage several fields more with them; and when a man has an opportunity of hiring additional fields, then should his judgment come into play, to take no more

than his old stock will manage to advantage, unless he has a sum of money ready to make an addition to it.

The same ill consequences attend either over or understocking a farm with all other cattle: and it would be to the farmer's advantage was he always to remember, that three beasts, of any kind, well fed, pay better than four without their bellies full. On the contrary, not to keep the stock necessary, is to submit to a constant loss. Both these sorts of conduct are frequently followed, to the great unprofitableness of farming.

The proportion of the pasture and arable lands of a farm is of great consequence towards the occupier's making a profit of his business.

I have already shewn, in one of my letters, how much more advantageous the former are than the latter; nevertheless many farms have scarcely any grass, and others none at all: the contrary fault, of having too much, never came yet within my observation.

The unprofitable practice of ploughing up pastures, and not laying them down again, which is so universal in this country among farmers, whenever their landlords will allow it, tends perpetually to impoverish them. They are all, to a man, mad after ploughed lands, and would willingly break up every acre of grass in their farms.

So general an opinion among them would make one think the practice really profitable; but the contrary appears beyond all contradiction to be the truth; I mean, according to the culture at present pursued in this country.

Two thirds of the land of a farm in a rich country should be grass; and a little one had better all be so. The vast expences of the plough, without doubt, keep many farmers poor, who, if their farms were grass, would not run half the hazard, and enjoy a much better income.

Particular points of bad management, for want of sense or knowledge, through slovenliness, idleness, or other obstructions to any profitable husbandry, are not what I mean to speak of here, since they are so very various, and so

totally ruinous, that no reasoning can be conclusive, unless all such exceptions are made.

The improper quantity of land in a farm is often against the farmer's profit.

Very large tracks, of two or three thousand acres, which are common in Norfolk, are too extensive for one farm. It is impossible for one man to cultivate such a quantity of land well: much of it must be neglected, and but little perfectly managed.

Great profit indeed arises from most of these farms; but they take a very large sum of money to stock and manage them properly.

Very small ones, unless the farmer does the whole business himself, are equally liable to objection. The medium, which is ever, in proportion, the most profitable, is that quantity of land which will admit of being stocked and farmed without the want of either any addition or diminution. What I mean is this.

Let us suppose a farm to consist of seventy acres of land, twenty of them grass, and the rest arable, in a rich country, the land from ten to sixteen and seventeen shillings *per* acre; the occupier must keep one servant, and if he does not work hard himself, one labourer all the year, besides some additional help at busy times.

I know there are many slovenly men, who cultivate (if their management deserves that name) such farms with fewer hands than I have mentioned; but their conduct can be no rule to good farmers. Four horses are also necessary for such a farm*.

Now, for the same standing expences of servants wages, horses, &c. the same number of ploughs, harrows, tumbrils, waggons, &c. &c. one hundred acres, or better, might be farmed with the same proportional profit: in this case, therefore, the tenant of seventy acres loses considerably for want of thirty or forty more. Indeed we seldom meet with a farm nicely proportioned to the stock on it.

There are many very evident reasons why farming should prove unprofitable to gentlemen who undertake to cultivate

* We are to remember the lands about Bury are light. E.

cultivate a part of their estates, whether for their amusement or convenience, or, generally speaking, even for profit.

A very fine Norfolk farm, of a large extent of country, the rent exceeding low, and a gentleman willing to be at the expence of marling, in such a case, there is no fear of considerable profit, even without perpetual attention: but in common farms, in rich countries, no profit can arise to any gentleman that does not give the business constant attention, and descend to *minutiæ**; which may be too disagreeable for him to submit to.

What I mean by profit, is not making the rent which he might receive from the tenant without trouble, and without hazard, but that additional sum which is the farmer's profit after his rent and all expences are paid. This is scarcely ever made by gentlemen, who farm either for convenience or amusement; and, excepting grass grounds, I am persuaded they lose considerably by keeping land in their hands. The plea of growing enough for family use of wheat, oats, &c. is a mistaken one; they had better by far buy every article, than have any thing to do with the plough†.

When I am told that farming answers to gentlemen, who I know do not give the *farmer's* attention to the business, I never believe it, or, at least, am persuaded that no regular accounts are kept. It will not be difficult to produce some good reasons for this incredulity.

It should be remembered, that the farms which gentlemen keep in their own hands are seldom above fifty, sixty, seventy, or an hundred a year, and not often so much. It is no easy matter for a farmer, with industry, sobriety, and application, to make above a rent profit in such a farm; and I believe but seldom so much. This is with every advantage of understanding his business, applying

* Matters seemingly of small consequence. E.

† Some gentlemen, who have no objection to their coachman's and their coach-horses ploughing, &c. may certainly keep some arable land in their hands with considerable profit, as all their work is clear gain. But I would, in the above, be understood to mean the unprofitableness arising from their keeping men and horses for that work alone. Y.

plying close to it, and doing some work (if his farm is small, a great deal) himself: how unlikely is it therefore that a gentleman, who may probably want these advantages, should make near that profit, or, indeed, any at all!

In the first place, a principal part of his business, his buying and selling, is transacted by his bailiff, or head servant, who must be paid for his trouble. He may be lucky enough to meet with an honest one; but I would never advise any one to let the profit of his farming depend on the honesty of other people. Suspicion, to the open generous mind, is irksome and grating: but the farmer should set out with the maxim of Descartes—to doubt of his very existence, and suppose every man a knave till he finds him honest.

But there are many inconveniences, besides these, in trusting to bailiffs.

The gentleman we must certainly suppose to be ignorant of farming; and he is then, of course, in danger of having an ignorant servant, without the ability of detecting him. However, the single expence of a bailiff, or a head servant, which are much the same, is too great to be kept constantly for a small farm; and in their absence the gentleman must depend on himself.

This is palpably no dependence at all; for can it be expected that he will forego his diversions, his excursions of pleasure, the company of his friends, the joys of society, to attend to his farm? I could almost as soon believe, that his wife would renounce an opera or a ball for the pleasure of dancing attendance on her butter and cheese in the dairy. The rural joys of romance are pretty much out of date now; and, alas! there is great difference between the employment of a farmer's wife in England, and keeping sheep on the plains of Arcadia.

Excuse this little digression. To return:

There are, even in a small farm, a thousand objects which require constant attendance.

Cattle of no kind will thrive but in the master's eye: every variation of the season to be remarked; the lucky moment

moment for ploughing, harrowing, sowing, reaping, &c. to be taught, and used with diligence and foresight; fences for ever to be attended to; and, in short, a million of other things, which require constant thought and endless application.

That single article, the employment of labourers, will alone run away with the profit of the whole farm.

When these points are considered with ever so little attention, surely the opinion I have adopted will not appear unreasonable. The advantages of the farmer over the gentleman will be seen evidently, not enjoyed, indeed, without some desert; for few of the latter, I apprehend, can address their countrymen in the words of Ctesinus: *Nec possum vobis ostendere, aut in forum adducere, lucrationum meam, vigiliis, et sudores* *.

But surely it appears plainly, from what I have said, that the unprofitableness of farming is scarcely ever owing to the art itself, but the mistakes of those who practise it.

As I have been so particular in distinguishing several points by which the followers of it lose, I shall now trespass a little longer on your patience, and give my sentiments on the custom of gentlemen's farming, in other respects than that of profit, to those who are not solicitous about it, and in relation to it, to those whose fortunes will not allow an indifference to such a point.

It is scarcely possible for a gentleman to live in the country without finding many inconveniencies in not keeping a team of farming horses, with waggons, carts, &c. and other implements used in the business of husbandry. While profit is not considered, there will flow a multitude of agreeable circumstances from farming, which will have some relation to almost every particular of a country life.

In respect of entertainment, what more rational, or more amusing, than country business, without the anxiety of caring for profit! The public good calls loudly to all gentlemen

* Neither can I shew you, or produce in this court, my constant attention, my watchings, and my bodily labours. I.

gentlemen to keep some land in their hands, that experiments may be made, and modes of agriculture pursued, different from the practice of the neighbourhood, for the farmers, at least, to see that their own customs are not the only good ones, and that there are improvements to be made even on *their* practice.

All the improvements and new inventions in agriculture come from gentlemen; scarcely one, that I ever heard of, is known to have been discovered by farmers.

I do not wonder at this, for I think it is natural enough; but, at the same time, it is a strong reason for gentlemen's farming, whether they make profit by it or not. The expensive use of manures, and introducing a garden culture into the field husbandry, were the effects, among a hundred other instances, of gentlemen's farming.

But if the public good was not to be considered, yet the mere amusement of farming, to a gentleman of fortune, who has the least taste for country business, must plead warmly for its practice. Such farmers soon make a garden of their estates, at the same time that they improve the value of them.

What can be more amusing than experimental agriculture? trying the cultivation of the new-discovered vegetables, and all the modes of raising the old ones; bringing the earth to the finest pitch of fertility, and growing plants infinitely more vigorous and beautiful than any in the common tillage; using the variety of new machines perpetually invented, and observing their effects; and, in a small extent of ground, seeing the growth of an infinite variety of vegetables, unknown in the common practice; perpetually enjoying the neatness of husbandry, that *simplex munditiis** of farming which gives the most beautiful colouring to every object around, and pleases the refined imagination with the enchanting prospect of all the elegance of nature.

Those gentlemen of small fortunes, who, if they practise any thing of farming, find it necessary not to be indifferent to profit, have many points to consider.

Such

* Elegant neatness. I.

Such an one should remember, although a farm will afford amusement, it will not yield profit without application. A constant attention to every article is highly necessary. He should keep the exactest accounts, and make memorandums of what knowledge he can pick up. For a few years he must employ a bailiff; and he will find that every day and hour will encrease his own knowledge, if he is attentive to the business.

Let him beware of trying experiments from books, except *in small*. It is twenty to one but he loses by them, if he does not begin with little patches of ground, to gain some experience, before he ventures on a whole field. All the work that is possible, he must put out to his workmen *by the piece*; if he employs many by the day, I assert it is impossible to make any thing of farming. Let him, when, he begins, apply a sufficient sum of money for that purpose; for he will find it a more expensive business than he may imagine. I repeat it, if he does not keep regular accounts, he will certainly be a loser.

If he has his choice, he should not think of farming less than an hundred a year, in a rich country.

If these points of advice, and many others which you, gentlemen, and your correspondents, are much more able to give than I am, are followed, no gentleman need be afraid of finding farming a profitable business*.

I remain, GENTLEMEN,

Bradfield,
April 2, 1765.

Your constant reader,
Y.

* We are not insensible of the value of such correspondents as Y. He reasons from facts, and, of course, his arguments must have great weight with our readers. His letters are in themselves valuable, and will carry with them their own recommendation. We thank him for the honour he does us, and hope he will have no reason to discontinue his favours. R. A.

NUMBER LXIII.

An Answer to Ruricola Glocestris, in which is contained an Estimate of the Expences and Profit of a Dairy of four Cows.

GENTLEMEN,

RURICOLA GLOCESTRIS I perceive has, in page 200. of this Volume, expressed some doubts of my estimate of the profit of grass-lands, and desires, if he is wrong, I would *set him to rights*. That he wants to be *set to rights* in his dairy-notions, or the county of Gloucester in its practice of farming, I am sure, is, from his letter, very evident.

Whenever any of your correspondents express their doubts of my estimates and calculations, or any other parts of my letters, I shall always, with the greatest readiness, explain any thing obscure, or which to *some* of your correspondents may appear *suspicious*.

I cannot do this in the present case, in any way so well as by laying before you an authentic account of the expences and produce of my own dairy.

I shall premise, that I have it already extracted from my account-books into a register of all my farming-experiments, which I regularly insert. I shall also subjoin a few observations on it, which I had before annexed to the account.

If my friend Ruricola, or any other gentleman that doubts of my calculation, &c. should accidentally come into Suffolk, he may convince himself, that Y. practises what he writes of; and I would freely shew him my ledger, containing the articles of the following account: I think I cannot give any gentleman more satisfaction.

EXPE-

EXPERIMENT. 1763.

Food, Produce, and Expenses of a Dairy of four Cows in a Year.

THEIR food, four small pastures, amounting to sixteen acres, or thereabouts. Two of them I fed in the spring, rather late before I shut them up for hay: another, of six acres, the cows had to themselves till the others were mown; and then I shut that up for a rowen (aftermath) crop of hay, cutting it the twentieth of August.

Therefore they had first that of six acres, another of two acres, which is common for all my cattle, being never mown; next a five-acre piece, after the hay was cleared from it, and then the other field of three acres: besides which, they ran four days in my clover, till, finding the butter tasted, I took them out.

It will appear also by the following account, that they eat in winter one ton and seven hundred weight of hay, and two loads and a half of straw bought for them, besides their share of some which grew on my farm, the whole of which (soft corn straw) amounted only to five acres of oats for them and four horses too; the chief of my lands lying that year fallow.

EXPENSES.

		<i>l.</i>	<i>s.</i>	<i>d.</i>
1763.	April 27. For two hundred weight of hay	0	5	0
	August 8. Twenty-five ditto	1	17	6
	Nov. 30. A load of straw	0	14	0
	Dec. 30. Half a ditto	0	5	0
1764.	Feb. 15. Ditto	0	3	0
	Feb. 20. A load ditto	0	11	0
Sundry expences, viz. pans broke in dairy,				
cheese-cloths, brushes, brooms, salt, &c. came				
exactly to				
		0	10	10
		4	6	4
N n 2		In		

In the above account is included nothing for firing which cost me very little, as the small bush-faggots, which I grub up on borders of fields to clear them for the grafs to grow, completely served my dairy this year: these are difficult of sale, fetch but little, and must be rooted up if no cows are kept.

The cook in the family managed as dairy-maid: there are in this respect great disadvantages in only keeping four cows, if a dairy-maid is also kept to attend them; for *she* may manage (and they do in this neighbourhood more, in proportion) eight or ten cows, as well as four, which alters the proportion of the expence greatly; and in firing it is but a small addition of wood to the addition of four or five cows. And Ruricola should remember, (a circumstance which he seems to have forgot) that I stated the twenty acres of grafs, not as a farm by itself, but expressly as an addition to one of fifty pounds *per annum*.

P R O D U C E.		l. s. d.	
Butter, milk, and cream, used in the family; the butter six-pence <i>per</i> pound, the cream six-pence <i>per</i> pint, the milk one half-penny <i>per</i> pint (the market prices)	—————	9	4 8
Seven hundred and sixty pounds of cheese, sold at two-pence half-penny <i>per</i> pound	—————	7	8 6
The value of two yearlings, kept for stock (valued by a farmer, who offered to take them at the price)	—————	3	10 0
Two sucking calves, sold at	—————	0	15 6
	—————	4	5 6
		20	18 8
Deduct expenses	—————	4	6 4
Profit, four pounds three shillings <i>per</i> cow,	—————	16	12 4

I will now venture to assert, that a notable farmer's wife would have made five pounds *per* cow; for, if Ruricola has been used to a dairy, he must be sensible of the difference between one kept merely for convenience, under a servant's management, and a farmer's,

I am

I am totally ignorant of every thing concerning a dairy; which will prevent my ever keeping many cows.

I can assure him of the exactness of the above account, in every respect but what relates to servants; and that point is absolutely against him, for he may be sure I know every thing *in favour* of the dairy: therefore, if there was any negligence in it, it makes good my assertion, that farmers make much more of it than gentlemen can, as their wives are constantly at the elbow of the maid.

EXPERIMENT. 1764.

Food, Produce, &c. of four Cows a Year.

Pastures the same as the last year. Turned them into an acre of the five-acre field the sixteenth of May, besides which, they had the three acres to themselves. Mowed this year the six acres, and the remaining four of the five acres. No clover.

EXPENSES.

1764,		l.	s.	d.
April 26 and May 8. Cloths, pans, brushes,				
salt, &c.	—	0	8	10
Faggots for firing	—	1	10	0
Eighteen hundred weight of hay	—	2	5	0
Half a load of straw	—	0	6	0
May 6. Four hundred weight of hay	—	0	10	0
July 1, and August 6. Salt, cloth, lead, mend-				
ing brooms, &c.	—	0	5	10½
October 10. For sundries	—	0	9	2
		5	14	10½

The fire-wood was most of it this year brush-faggots out of a wood, and but few of the small bush-faggots: I am therefore enabled better to calculate their value. Besides the straw bought, they had what was to spare of my farm.

PRODUCE.

PRODUCE.

	£	s.	d.
1764-			
June 14. Three calves, sold to the butcher,	3	6	0
Aug. 18. Seven pounds and a half of butter	0	3	9
Nov. 1. For two hundred and thirty-eight pounds of butter made to October 22.	6	4	9½
For four hundred and seventy-three pounds of cheese, at two-pence half-penny per pound, made to the end of August —	4	18	6½
For milk and cream to October 22. —	1	11	6
March 1. For eighty-two pounds of butter from October 22, to January 17. —	2	8	0
For milk and cream to February 14. —	0	10	6
For two hundred and thirty-six pounds of cheese, eighty at two-pence half-penny, and one hundred and fifty-six at two-pence per pound —	2	2	8
Sold two heifers, the last year's yearlings, for —	7	0	0
Valued, &c. at then —	4	5	6*
		2	14 6
		24	0 6
Expences —		5	14 10½
Profit, four pounds eleven shillings per cow,	18	5	7½

I think these two accounts (not calculations) must be satisfactory to your correspondent. *Ruricola*; and he, doubtless, observes nothing is yet said of hogs in the above. I have reckoned not a farthing for all the flet milk, and whey: these were given my hogs, of which more by and by.

I think I have cleared up the mystery of the cows: I shall now add some observations, which I had annexed, to the account of my cows for 1763, as follows.

There are some very material observations to be made on this account. Is four pounds three shillings the value of

* Our correspondent in this place seems to have made a small mistake, as they were valued only at three pounds ten shillings. E.

of a cow's feed a twelvemonth? Surely not. Two steers, or heifers, may be kept and fattened in the place of one cow: these will undoubtedly pay better.

I am aware of the objection, that a dairy is never supposed to answer well without a good dairy-wife to do all the business of it. This certainly makes a material alteration: but four pounds a cow is, in this neighbourhood, thought pretty near the profit of one, at least as farmers wives *own*. Yet it must be evident, if there was no further consideration, a dairy must be attended with constant loss: this consideration is the advantage derived from the hogs, which evidently composes the whole profit of a dairy.

I am not yet able, from experiments, to assert how many hogs may be kept on a given number of acres without the aid of a dairy: this is necessary to be known before the exact profit of cows can be ascertained. The spring litters stand greatly in need of the milk and whey, which is then coming on; so that few, I doubt, could be bred at that time of the year without them.

I shall, every year, make all the observations I can on the feeding of them, to be able to judge better for the future.

How contrary to Ruricola's notions are mine! Were it not for the hogs, I would have nothing to do with a dairy, with four pounds profit *per* cow. He is contented with forty shillings, hogs (or pigs, as he calls them) included.

I speak from experience, and know well that grazing, were it not for the hogs, would be more profitable than four pounds *per* cow.

I come now to speak of my hogs; and in this point, like the last, I shall quote a page or two from my manuscript register of experiments.

EXPERIMENT. 1763.

Food and Produce of a Sow, and the Pigs bred by her, in a Year.

She pigged in April seven pigs, and in October eleven.

1

EXPENCES

EXPENCES.

1763.		<i>l.</i>	<i>s.</i>	<i>d.</i>
Nov. 18.	For two coomb of drains *	—	0	1 4
	Cutting a litter	—	0	1 6
Dec. 8, and Jan. 21.	Ten coomb of peas	—	5	1 0
	Expences on <i>ditto</i>	—	0	1 0
	For ten bushels of barley	—	1	0 0
Feb. 17 and 25.	Expences in felling	—	0	11 6
	For nine coomb of drains, and expences	—	0	7 6
	For two coomb and two bushels of peas	—	1	6 3
March 12.	Drains	—	0	1 6
			<u>8</u>	<u>11 7</u>

PRODUCE.

Oct. 30.	A sucking pig	—	0	2 3
	A fat roasting hog	—	1	9 0
	A fat hog, one hundred and ten pounds weight	—	1	12 9
Feb. 17.	<i>Ditto</i> , one hundred and sixteen pounds weight, at four shillings and ten-pence per stone †	—	2	0 0
	Heads, &c.	—	0	5 3
Feb. 22.	Three fat hogs, sold alive	—	6	7 0
	One <i>ditto</i> , at four shillings and ten-pence per stone	—	2	0 0
	Ten live pigs, carried to next year's account, valued at	—	4	16 6
			<u>18</u>	<u>12 9</u>
	Expences	—	8	11 7
	Profit	—	<u>10</u>	<u>1 2</u>

The dairy this year was four cows: all the whey and set milk was thrown into the hogs cistern, together with the dish-wash and offal of the kitchen, and the drains of about twenty coomb of malt used in the family, besides which, thirteen coomb more I bought for them: all this composed their common wash while lean: for three months in

* Or grains, as they are frequently called. E.

† By the stone is, we presume, here meant fourteen pounds. E.

in the summer, the sow and the seven pigs ran in my clover. These articles, besides common grafs, (on which, by the by, they feed as well as sheep) were all their lean food.

Now, from the above account must be deducted the value of the clover-feed, as that certainly was not from grafs-ground, and may be estimated. Such deductions I have no objection to, as we may come near the mark in valuing: my calculation, however, does not require them, as the twenty acres were to have been an addition to a farm, not one by itself.

		<i>l. s. d.</i>
Seven hogs, at fourteen-pence <i>per</i> week, for three months, come to	—	— 0 14 0
Thirteen coomb of drains	—	— 0 10 4
		<hr/> 1 04 4

But let Ruricola state these two articles at two pounds one shilling and two-pence if he pleases; the propriety of the sums mentioned in my calculation for the profit of a sow will not be impeached thereby.

EXPERIMENT. 1764.

Food, Produce, &c. of Hogs a Year, maintained by a Dairy of four Cows.

The old sow pigged in April, eleven, and again in November, twelve; the young one seven, in January, 1765.

EXPENCES.

	<i>l. s. d.</i>
1764.	
Ten pigs, from last year's account, to be reckoned here	— — 4 16 6
May 6. For eighteen coomb of drains	— 0 13 2
19. For two coomb of shorts *	— 0 4 0
For seven coomb and two bush. of drains	0 5 6
	<hr/> 5 19 2

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* Cribble. Y. — We imagine our correspondent means malt-dust. E.

			<i>l.</i>	<i>s.</i>	<i>d.</i>
1764.	Brought over		5	19	2
May 19.	For a young sow and boar	—	1	4	0
28.	For eighteen coomb of drains	—	0	12	8
July 2.	For two bushels of shorts	—	0	1	0
19.	For four coomb <i>ditto</i>	—	0	8	0
Aug. 23.	Expences in felling	—	0	5	0
	For two bushels of oats	—	0	4	0
Oct. 12.	For five coomb of drains	—	0	2	11
	Sundry expences	—	0	1	6
Nov. 1.	For one coomb of shorts	—	0	2	0
13.	For two bushels <i>ditto</i>	—	0	1	0
	Expences in felling	—	0	3	5
24.	For one coomb of shorts	—	0	2	0
Dec. 17.	For one bushel <i>ditto</i>	—	0	0	5
22.	For three bushels* <i>ditto</i>	—	0	4	6
28.	For tail barley	—	0	14	3
29.	Grinding <i>ditto</i>	—	0	0	6
Jan. 3.	For bran	—	0	1	6
	Cutting pigs	—	0	1	6
8.	For sixteen coomb of drains	—	0	10	8
12.	Grinding barley	—	0	1	0
30.	Six coomb of drains	—	0	4	0
25.	For six bushels of barley	—	0	14	3
Feb. 1.	Grinding	—	0	1	3
22.	For two coomb of shorts	—	0	4	8
27.	For one hundred and twenty bushels of turneps, and five bushels of cabbages; say one hundred and twenty-five bushels of turneps	—	0	6	0
<p>N. B. My crop of turneps this year produced eight bushels <i>per</i> rod (their root and top cut off): one hundred and twenty-five bushels is therefore sixteen rods, which, at two pounds two shillings <i>per</i> acre, the price this year, comes to four shillings; but I have said six shillings.</p>					
			12	11	2

A man

* Does not Y. here mean three coomb, or twelve bushels? E.

		l.	s.	d.
1764.	Brought over	12	11	2
Feb. 27. A man boiling turneps	—	0	0	9
For five bushels of coals, at three times,	—	0	5	5
March 2. For ten coomb of drains	—	0	6	8
Expences	—	0	0	6
For one coomb of shorts	—	0	2	4
6. Ditto	—	0	2	4
8. A man boiling	—	0	1	0
Coals	—	0	2	0
		13	12	2
Three months feed in clover	—	0	12	0
		14	4	2

P R O D U C E.

Aug. 22. Sold eleven pigs, lean, for	—	5	15	0
Nov. 13. Sold nine lean	—	12	3	0
March 25. Value of stock carried to next year, (the old sow excepted) viz. the young sow, (one of the ten) with six pigs	—	2	12	6
Twelve pigs	—	5	8	0
A little sow with pig, (bought May 19.)	—	1	5	0
The boar	—	1	1	0
		10	6	6
		28	4	6
Expences	—	14	4	0
Profit	—	14	0	6

Before I make any observations on this account, I shall explain the price I charge for clover-feed.

I am enabled to do it very clearly this year, as I had none of my own, but hired a field of two acres and three rood, at one pound thirteen shillings *per* acre, from May to Michaelmas. I hired it purposely for my horses, but kept the ten hogs in it for three months.

O o 2

The

The price of the clover was four pounds ten shillings and six-pence. The cattle it fed were

Five horses, three months;
 Ten hogs, three months;
 Thirty-eight sheep and lambs, one month;
 Two heifers, two months.

The common price of joisting* a horse is one shilling and six-pence *per week* in clover; but that I may raise the price for the hogs, I will reckon the rest of the cattle as low as possible.

	<i>l.</i>	<i>s.</i>	<i>d.</i>
Five horses, say at three shillings and six-pence			
<i>per week</i> , for three months —	2	2	0
Thirty-eight sheep and lambs, at two-pence <i>per</i>			
couple, for one month —	1	5	4
Two heifers, at three-pence <i>per week</i> each, for			
two months —	0	8	0
The hogs —	0	12	0
	4	7	4

This comes as near the truth as any calculation I can make; and I can every year, by hiring clover, keep my hogs as cheap as this, without any assistance from arable land of my own.

The above account of the profit of hogs surely displays the inattention of Ruricola, or the folly of the Gloucestershire farmers; and I apprehend he will not now suppose that *corn grew spontaneously* in the twenty acres of grass I calculated, or that the profit of the nine years is *more than half increased*. And when he remembers, that the accounts I have stated relate to seventeen acres, and the calculation was twenty, I apprehend I have answered him fully.

I cannot but observe, that it is extremely unfair to criticise my calculation as a farm by itself, when I suppose it to be an addition to one of fifty pounds *per annum*; which circumstance would alone be answer sufficient to a farmer who is so wretchedly situated as to be contented with

* Or giving pasture to, E.

with forty shillings a year profit on a cow, pigs included.

Ruricola cannot, I imagine, reckon the rent of his grafs to his cows, as he surely must keep other catle as well as them; and then the rent should be deducted from the total, in the manner of my calculation.

However, Mr. Ruricola has given me such a specimen of the Gloucestershire farming, that I should not be surprised if they keep neither sheep nor horses, nor make any hay*.

H. I wish I had it in my power to satisfy E. S. concerning the pollard wheat he mentions; but I can learn nothing of it, unless it is a bearded great wheat, which, in Suffolke, they formerly let stand in the field till the awns dropped off, and then they called it poll'd wheat.

There are three sorts of this bearded wheat here, white, red, and blue-chaff. The wheat E. S. mentions may be one of these, or some other used in High Suffolk, of which I am ignorant. These sorts are not apt, at all, to be laid, and will bear wet weather better than the common sorts.

I am very much obliged to E. S. for his information relating to drill-ploughs and horse-hoes.

E. S. is mistaken in his calculation of our ploughing (page 86.): the four shillings *per* acre is,

		s.	d.
The man	—	1	0
Two horses	—	2	6
Wear and tear	—	0	6
		4	0

No boy used. They work eight hours, and plough an acre a day. A farmer I asked about this, says I should reckon

* I should be glad to know the management in Gloucestershire that can reduce the profit of a dairy so low. And it would be of use to many of your readers, if other correspondents would, through the channel of your work, inform us of the profit in different parts of the kingdom. Y.—We join with our correspondent in this request. E. R.

reckon one shilling for wear and tear. I reckon nothing for beer, as the ploughman has time afterwards for chance joks of other kinds.

III. Mago, page 231. of this Volume, says, "I was
 " sorry Y. of Bradfield, should complain of the substance
 " of M. du Hamel's work being part of Mr. Mills's
 " Husbandry. For my part, I am much pleased with
 " having the knowledge of so many great men laid be-
 " fore me at one view."

In answering another person, or differing from him in sentiment, nothing can be more unfair than false quotation. Let Mago read the passage he finds fault with again, and he will find that I do not disapprove of Mr. Mills's having inserted Du Hamel in his treatise of husbandry, otherwise than as making me pay twenty shillings, when I had already laid out fourteen for a part of the same dish before. His inserting Du Hamel, or his published translation of Du Hamel, are two very different things. I value Mr. Mills's book as a useful collection of other English authors sentiments and translations, but not enough to think four octavos worth thirty-four shillings, when I ought to have had them for twenty.

But I am not surprised at this unfair dealing in a person who attacks the incomparable author of the *Essays on Husbandry*. He criticises that excellent work in an extract from it: but his total inattention to its value, and to the subject of it, appears from his finding fault that it was not contained in a letter to the *Museum Rusticum*. Not a needless syllable is in the book, when read by a man of education and taste for agriculture; but as for farmers, who ever supposed it was wrote for their reading? The author knew too well, that they will never, by books, be induced to cultivate any thing out of the common road, to address himself to them. How little anxious for the improvement of agriculture must any one be, who can regret six shillings for the *Essays on Husbandry*! abounding with a vast variety of knowledge, the most enlarged reflections, the most useful advice; and containing the
 best,

best, completest, and most satisfactory practical direction for the culture of lucerne, of any author in any language, on that or any parallel subject.

Mago's objections are scarcely worth notice, and in this case can arise from nothing but his not having seen the book.

Pardon, gentlemen, my being, perhaps, too warm *; but the veneration which I cannot but have for the author of so admirable a work, prompts me to refute † criticisms which he certainly will not answer.

I remain, GENTLEMEN,

Bradfield, Your constant reader,
April 4, 1765. Y.

N U M B E R LXIV.

Queries respecting some Points of Husbandry, to be practised in the Neighbourhood of Richmond, in Yorkshire.

GENTLEMEN,

IN some parts of this county, the farmers labour under many disadvantages, touching the ripening of their crops, by reason of their vicinity to the hills, the frequent rains and mists which begin early in the spring and the back end of the year.

It is generally imagined, that this being a fault arising from the situation, will hardly admit of any remedy; and indeed it may seem very doubtful (however desirable) whether any can be applied with success to land so circumstanced.

However, relying on the candour of your correspondents, I beg leave to offer a hint, and ask the favour of their

* Y. will, we hope, pardon our omitting a few words in his letter, for the reason above mentioned: we mention this, as we should be very unwilling to offend him, or, indeed, any of our correspondents. E.

† A particular examination of its excellencies is not necessary in answer to a general criticism, and that founded on reading an extract. Y.

their opinion*, whether certain seeds, such in particular as beans and peas, and roots, as potatoes, which are generally sown and planted in the spring, would not receive great forwardness in their growth by their being first lodged and deposited in a quantity of earth kept free from frosts for some time before they are sown, according to the time each sort of seed may require to sprout, for they should not lie so long in this preparative earth as to make them vegetate †?

It is inconceivable to think what great advantages would accrue to the hilly countries, if the corn, sown in the spring, could, by any contrivance, be forwarded in its growth, so as that it might be reaped soon after hay-harvest, and before the cold rains and mists set in for the winter; for in many places, unless it proves an exceeding fine season, it is with difficulty ripened at all.

The inhabitants of this country ‡ are obliged to fetch their corn for bread twenty, thirty, nay, sometimes forty miles on horseback, and in places where there are the richest meadows that you can conceive, which greatly enhances its value, and is oppressive on the poor.

If, gentlemen, you can contribute any thing towards promoting a matter of such general utility, you will richly deserve the thanks of the public.

I have heard it much disputed, whether, if a farm consisted chiefly of good meadow land, worth twenty shillings
per

* We hope some of our correspondents will give us their sentiments in the above matter. We shall presently hazard a thought or two on the subject. E. R.

† We have not the least doubt, but that depositing some sorts of seeds in moistened earth, previous to their being sown, would greatly forward their growth, and might probably be of service in the circumstance mentioned by our correspondent: we have, in some cases, ourselves experienced the advantage of this method; but the celebrated Monf. D'Ambournay has established the certainty of it in his culture of madder by seed, as may be seen in a piece of his, lately published in the Foreign Essays on Agriculture and Arts, Article VI. page 41, to which we must refer. E. R.

‡ By the post-mark on our correspondent's letter, we conclude he lives near Richmond, in Yorkshire. E. R.

per acre, it would be adviseable for the farmer to plough such good land or graze it, where the only advantage he could expect from the latter, on an average, could not exceed fifty shillings *per* acre. The plea that is generally urged against converting a piece of meadow (that is not excessively hide-bound and covered with moss) into tillage is, that it is a pity to plough such land, where a plough never went before; and thus they are content with reaping a small advantage by grazing, when, it is apprehended, it might be doubled, if in tillage.

For my part; I look upon the rent of land to be an article of small consideration, compared with the expence of managing it in tillage.

Good land will certainly produce greater crops than bad; less tillage, manure, and cultivation is required; your crops will better answer in precarious seasons, whether in an excessive drouthy, or hot, dry seasons; and to me seems equally adapted for the growth, especially of the most profitable species of grain, as wheat, coleseed, &c. as land worth twelve shillings an acre*: but as I chiefly write for instruction, must beg the favour of your opinions in the two foregoing articles, as hundreds may chance to profit by your advice and direction.

I thank you for the satisfactory answers you gave me to the queries in my letter, inserted in your Third Volume,
VOL. IV. No. 20. P p Numb.

* It is not in general profitable, in the end, to plough up a rich meadow in good condition; yet, under certain circumstances, it may be highly advantageous, especially in a country where the inhabitants are obliged to fetch their bread-corn so far, which we did not know was the case in any part of England. The price of corn must, indeed, on such occasions, be greatly increased by the expences of carriage; so that, though the meadows, when they were broke up, might not yield quite so large crops of grain as in some other parts, yet would it be profitable husbandry. The farmer should, however, be very cautious in examining the nature of the soil and the exposure of his meadow before he attempts to break the turf, as we would only recommend the ploughing it in case the land should be well adapted to the growth of corn. E. R.

Numb. XXVIII. page 132, touching the superior benefit
of dung or tillage * ; and am,

GENTLEMEN,

Yorkshire,
March 30, 1765.

Your constant reader,
Y. X †.

NUMBER LXV.

*Of the Difficulty of finding out the Grasses, for gathering
whose Seeds Premiums are offered, by the Delineations.*

GENTLEMEN,

I Have lately applied myself to the perusal of Mr. *Mills's* account of the grasses, for gathering the seeds of which by hand, premiums are assigned by the society for encouragement of arts, &c.

This gentleman appears to have given us all the light on this subject which he could derive from Mr. *Stillingfleet's* essays, and the delineations of the several grasses which that ingenious inquirer has formed.

Yet, after all, I must own myself of opinion, that these writers (to whom *alone* the society refers the candidates for instructions) seem insufficient to give such instructions as may enable the candidates to be successful.

Mr. Stillingfleet's

* We esteem it a particular pleasure when we have it in our power to gratify any of our correspondents. This gentleman would oblige us much if he would inform us what is the nature of the husbandry practised about Richmond, and what sorts of grain they grow, as they are obliged to send so far for their bread-corn; whether rye is not propagated there, as it is in many other parts of Yorkshire; whether oats yield good crops; and, finally, whether the reason of the farmers not growing much bread-corn, is not their being situated on the north side of the hills. E. R.

† We have taken the liberty of altering the signature of this letter, as well as of that formerly sent us by this gentleman, in order to distinguish him from another gentleman, to whom we are indebted for many capital pieces, and who always signs his letters Y. Z.

Mr. *Stillingfleet*'s delineations appear accurate, and are probably as much so, as a common engraver can execute: yet, I believe, whoever compares *real grasses* with them, will often find reason to doubt whether, by the copy, he has found out the original.

The want of colours, which cannot be represented on a copper-plate in black and white, is a considerable want to the inquirer. The different appearance of the same plant in its different stages, and the uncertainty in which of the stages the delineation of the plant has been taken, is another considerable source of error. The different size of the same plant, according to the differences of soils and years, is another cause of perplexity.

Since I obtained these delineations of Mr. *Stillingfleet*, I have endeavoured to find out the principal kinds there represented, and am very doubtful how far I have succeeded. I have shewn the grasses I collected, and the delineations of Mr. *Stillingfleet*, to several ingenious persons, who, on comparison, have been in doubt as well as myself.

I apprehend Numb. 6. * to be the great meadow-grass; but I have doubt whether Numb. 5. is the *purple fescue grass*, though its size and form are smaller and finer than the delineation †. I am, however, much more in doubt about Numb. 3. which seems too small to answer the delineation of the *vernal grass*, whose delineation is not very unlike some species of the wheat ears, especially when they are small. However, if this specimen be not the *vernal grass*, I think we have none in our meadows; and as this grass which I send appears early, I am sometimes inclined to think that it must be the *vernal* ‡. The

P p 2 size

* See plate II. fig. 6. The specimen sent us by Mr. Comber was the great meadow-grass, or great poa; but as a finer has been since sent us by another correspondent, the figure is engraved from the last. E.

† See plate II. fig. 5. Mr. Comber's specimen was right, being the meadow-fescue advertised for a premium; but being not so perfect as what grows nearer London, the figure was engraved from another specimen, sent us for that purpose. E.

‡ See plate II. fig. 3. The specimen was true, but small. E.

size of the delineation of the *meadow fox-tail* leads me also to conclude, that the specimen, Numb. 9. may not be the true species; yet can I find nothing at present in the meadows which can come in competition with it. I have, however, a kind of general obscure remembrance of having seen something in our meadows, perhaps at a later season, which bore a better resemblance to the delineation of meadow fox-tail, than what I herewith send*.

I find none of the true crested dog's-tail, which (according to the delineation) has the parts of its head set thick and close on each side of the stem, like an ear of wheat.

Notwithstanding all that Mr. *Stillingfleet* has said of the ease with which seeds may be gathered by hand, I continue to think that the gathering of them in any considerable quantities, *pure* and *ripe*, must be a work of difficulty in general; and the premiums, to be proportioned thereto, should have been more considerable.

A gentleman, who is skilful, may make a boy gather a pretty quantity in a bye place; but as cattle of all kinds greedily eat the heads of the good grasses, we must not hope to meet with them any where in any considerable plenty, except in meadows; and the damage of gathering them there is notorious.

I should be glad to know what are the times in which the several grasses, for which premiums are proposed by the society, have their seeds ripe, and on what kinds of ground they respectively grow†. This information will
probably

* See plate II. fig. 9. It was the meadow fox-tail, but small. Perhaps the inferior size of these grasses may be attributed to their being gathered so far north. E.

† It is no easy matter to satisfy, with any degree of precision, Mr. Comber in this respect. We know of no husbandman who has yet experience enough in the culture of grasses to say precisely what soil is best adapted to each sort. As to the time of ripening, or coming into ear, Mr. *Stillingfleet* is the best guide, who says the grasses contained in our plate come into ear in the following order: annual meadow, meadow fox-tail, vernal, great meadow, crested dog's-tail, sheep's-fescue, purple fescue, fine bent, yellow oat, flore fescue, the whole time from the beginning of May till about the middle of June. E.

probably be acceptable to many of your correspondents as well as to myself, and to still more of your readers. I shall, in return, communicate to you some observations which I have made on several grasses; a subject of great importance in agriculture, and yet very slightly considered hitherto.

I am, GENTLEMEN,

Your faithful correspondent,

East-Newton,
June 4, 1764.

THO. COMBER, jun.

NUMBER LXVI.

Further Observations on several natural Grasses; particularly on many for gathering of whose Seeds by Hand the Society of Arts has proposed Premiums, &c.

GENTLEMEN,

I Am inclined to think in general, with the Frenchman, that *attention** is the surest harbinger to *success*. Yet after the strictest *attention* to the delineations of Mr. *Stillingfleet*, and the descriptions of Mr. *Mills*, I must think the *instructions* thence derived very insufficient to enable an *industrious pupil* to become a *successful candidate* for the premiums proposed by your society for gathering of grass-seeds; and these are all the instructions offered by the society to the candidates, except they can have recourse to the society's store-room, which few of them can have.

The

* A late great statesman, famous for his skill in eating, went, many years ago, to sup with a lord in the opposition, as famous for his taste in other things of more consequence. The courtier, willing to ingratiate himself, and supposing all others pleased with what pleased himself, exclaimed "How is it, my lord, that you have always good soup?" His lordship, with proper neglect, referred him, for an answer, to his cook. Monsieur being introduced, and the question put in form, replied with becoming gravity, "*C'est par l'attention.*" COMB.

The subject of grasses is very nice. The same grass in its several stages puts on so many very different appearances, both in *form* and *colour*, that one can hardly guess at it from an *uncoloured delineation* in one form. The soil and weather also produce such differences in the same grass, that the most attentive observer must be often greatly at a loss.

However, as the subject is *new* and *important*, hints may be acceptable to those who are desirous of pursuing this useful enquiry; therefore I send you such further observations on natural grasses as have occurred to me since I last addressed you on this subject.

I. You inform me, that I am right * in the specimen which I sent, marked Numb. 6. and which is called, from *Stillingfleet* and *Mills*, the *great meadow-grass*, and by your society the *great poa*. On this I have some observations to communicate. Mr. *Mills* supposes two of *Baubin's* plants to answer to the *great meadow-grass*; yet speaks with diffidence, as he has no *botanical description* from *Stillingfleet*. (See his Third Volume, page 334.) Now, one would think, that if the *delineation* be good, there can be no great occasion for a *botanical description* to enable an *attentive* and *intelligent* observer to know whether a grass be that delineated.

But the truth is, Mr. *Stillingfleet's* delineation represents not the grass in a state of *bloom* or *flowering*; and Mr. *Mills's* distinction from *Baubin* is, into the species with three, and with four flowers.

I have observed this grass in its state of *bloom*, and find on some stalks both the three-leaved and the four-leaved bloom; yet will I not presume to say, that these blooms grow *naturally* so, it being very probable that one of the very small leaves of some of the blooms may have been displaced by wind, &c.

II. I am inclined to believe, that the grass of which I send you specimens †, (marked Numb. 2. and 3.) is the *annual*

* Mr. Comber was informed of this in a private letter. E.

† The specimens mentioned by Mr. Comber were annual *poa*, or meadow-grass; but being very small, fig. 8, in plate II. was not engraved from any of them. E.

annual meadow-grass of *Stillingfleet* and *Mills*, and therefore, I suppose, the *annual poa* of the society, rather from the circumstance of its growing by way-sides, and not being injured by frequent treading, as Messrs. *Ray* and *Mills* observe, than from its very exact agreement with Mr. *Stillingfleet*'s delineation. Mr. *Mills* observes, that "the flowers and stems of this plant do not grow brown so soon as those of other grasses." But, I must own, they have a *reddish* or *whitish* cast, as they are of one or other of the two species* of this plant, which I have observed; so that, if they make "a more pleasing turf than any other grass," (as Mr. *Mills* affirms, page 335.) the cause must be their thriving under foot; and therefore they may be best for lawns, which are much trodden, and would be quite bald, if other grass were in the place, and their *reddish* or *whitish* cast at a distance may not be perceived.

III. According to the justest idea which I can form of the skilful *Parkinson*'s rude delineations for wooden cuts, his *gramen pratense vulgatus majus et minus* seem only species of the greater meadow-grass; and his *gramen pratense minimum album et rubrum*, the two specimens of the annual meadow-grass, marked Numb. 2. and 3. herewith sent.

IV. I send you, gentlemen, (marked Numb. 4.) some specimens of what I apprehend to be the *sheep's fescue*, as it tolerably † agrees with Mr. *Stillingfleet*'s delineation. That gentleman says, he could not find any stems of this grass on a celebrated sheep-downs, except where it was defended from the sheep ‡. I gathered three specimens, and

* I have put up only one of the *reddish* species; not that this kind is so rare that I could not collect more, (though, I think, it seems rarer hereabouts than the other species) but because I have lost all the rest which I had collected of this kind, and cannot, with convenience, go out to gather more. COMB.

† The five stalks, which I send wrapped together as *sheep's-fescue*, were gathered some weeks ago; and the two wrapped in an outer fold of the paper were lately gathered, and seem to me the same grass nearer ripening of the seed. COMB.

‡ Amongst the specimens sent us as *sheep's-fescue* by Mr. Comber, only the two proved to be that grass; the rest were great meadow-grass. E.

and could have gathered much more, on a celebrated sheep-walk in this estate. But I ascribe the finding of it on open parts of this pasture to its abundance, and doubt not but Mr. *Stillingfleet's* conclusion, from its not being found uneaten in open sheep-pastures, that it is loved by sheep, may be very well grounded. This specimen, however, is so nearly like the *purple fescue* and *meadow grasses*, that I am far from being confident I am right in my conjecture.

V. You inform me, that the specimen which I sent, marked Numb. 5. is the *purple fescue*, or *meadow fescue*, as it is called by the society. I cannot help wishing, that a variety of names of the same grass were avoided as much as possible, since such variety occasions nothing but *doubt and confusion*.

VI. I am further informed by you, that the specimen which I sent, marked Numb. 3. is the *vernal grass* advertised by the society. On this grass I have only to observe, First, that it is *very fragrant*, and therefore agrees well with Mr. *Stillingfleet's* epithet *odoratum*, and Mr. *Mills's* observation, that it gives a *grateful odour to hay*. Secondly, it turns *yellowish*, and therefore agrees with *Baubin's* description, viz. *Spica flavescente*. Thirdly, as it has a most pleasing fragrancy, it must be peculiarly proper for meadow-grounds.

VII. I have passed over the *fute fescue*, gentlemen, not because I have no observations to make upon it, but because I have several, which may better appear in a letter by themselves. (See page 127. of this Volume.) I send, however, a specimen. (See plate I. fig. 6.)

VIII. You tell me, that I am right in the specimen marked Numb. 9. which I sent for the *meadow fox-tail*. It seems a strong and useful grass.

IX. Mr. *Stillingfleet* says, that he has always seen the *fine bent* and *silver-hair grass* along with the *purple fescue*. We have plenty of this last; but I am far from being convinced that I have found any stalks of either of the other two. However, upon comparing some grasses this day with Mr. *Stillingfleet's* delineations of the *fine bent*, *mountain-hair grass*, and *silver-hair grass*, I have (in consequence

sequence of the opinion of a clergyman, who is an ingenious botanist) now sent you three specimens, marked Numbers 6; 7, 8. which, we apprehend, may *probably* be those three grasses, the numbers corresponding to the order in which they lie in *Stillingfleet's* delineation*.

X. I send you, gentlemen, what seems *indisputably* the "*crested dog's-tail*," marked Numb. 9†. It had not shot from its pannicle when I addressed you last; and therefore it is no wonder that I should find none. It is now in its full bloom, which is a fine *purple*, till it begins to decline and change to *brown*. I find none so large as Mr. *Stillingfleet's* delineation, though our ground is in many places very good. However, perhaps, before this grass arrives at its full growth, it may answer the delineation even in this respect. I do not now wonder that Mr. *Stillingfleet* should have the quantity of this seed which he speaks of, gathered by a boy in the time he mentions, as it is very common, I observe, that when in its growth it is hardly touched by any sort of cattle; though, I suppose, when dried, it may be readily eaten by any of them, as is the case with many other grasses. Mr. *Stillingfleet*, indeed, thinks that the best mutton (next to what is fed on the *purple* and *sheep's fescues*, the *fine bents*, and *silver-hair grasses*) is fed on the *crested dog's-tail*; and therefore recommends it for parks, and adds, that he has known excellent venison where it abounds. If Mr. *Stillingfleet* has actually seen sheep and deer feed upon the *crested dog's-tail* with *avidity*, his observation-deserves attention: but, as I have seen nothing of this, I am inclined to think that the goodness of the

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Q q

mutton

* The fine bent sent us by Mr. Comber agrees with a specimen of that grass sent us by another gentleman, being fig. 10. in plate II. And what he calls the silver-hair grass is the yellow oat, for the gathering of which a premium is advertised. This grass is represented plate II. fig. 1.

† Mr. Comber's *crested dog's-tail*, being not near so fine a specimen as fig. 2. plate II. the figure was not engraved from it; and this, indeed, was the case with all his specimens. E.

mutton and venison, observed by Mr. *Stillingfleet*, may have arisen from unobserved grasses.

I am, GENTLEMEN,
 East-Newton, Your constant correspondent,
 July 11, 1764. THO. COMBER, jun.

NUMBER LXVII.

*An Account of a Yorkshire Manufacture of Barley; with
 Observations on Winter-Grass, its Usefulness, and an Error
 relative to it corrected,*

GENTLEMEN,

THE subject of this letter comes doubly within your plan, as its basis lies in *agriculture*, and its *super-structure* rises in *manufacture*, and may, in due time, become the object of commerce. Mr. *Mills*, with the laudable spirit of an *English* patriot, on the article of barley observes,

“Barley has also its *medicinal* virtues. We send a great deal of it to *Holland*, and after it is made into *pearl-barley*, or *French* barley, as it is commonly termed, (for both are of the same kind, though differing somewhat in whiteness and size of the grain) *wisely* re-import our own original growth, loaded with an extraordinary charge, which might easily be saved by manufacturing it at home.” Vol. I. page 431.

Mr. *Mills*, I suppose, will be glad to know that this reproach upon the wisdom of his countrymen is wiped off by some of them, there having been, for some time, a successful manufacture of this kind set up and carried on in the moors a few miles north of this place; and if this example be followed in many other places, convenient for exportation, we may not only in time cease to *re-import* our own barley, but even *export* it *manufactured* to places supplied at present by the *Hollanders*.

Mr.

Mr. *Mills* will see, from the above quotation, how glad I am to give him due praise, and on account of this, and other quotations with this view, will be persuaded, I hope, that I never quote him for censure without reluctance, and only with a view to advance some useful truth.

He will therefore, I hope, not be displeased, that with this view only I quote a sentiment in which I must differ from him.

To my great surprise, I find Mr. *Mills* (in page 365. of his Third Volume) advising the husbandman rather to *cut off* the grass which is not eat in autumn, than to let it rot on the ground, on this *strange* supposition, (for so I must, in justice, call it) that the *old* grass will hinder the *young* blades from shooting in spring.

Every one, at all acquainted with the growth of grass, must know, that young blades of grass do not shoot just from the same part of the root as those which bore the last year's grass; but that the shoots of the next year's grass are preparing in the ground long before the present year's grass is usually eaten; so that it is absolutely impossible that the continuance of the *old* grass should prevent the shooting of the new. Any one, who has the least doubt, with regard to this fact, remaining, may satisfy himself by taking up a root of grass, in which he will have *ocular demonstration* of the point.

In short, the *old* grass remaining uncut is so far from injuring the growth of the *new*, that it promotes it by more than one way, *viz.* First, by keeping the roots, whence the new grass is to spring, warm, and consequently by actually promoting vegetation, just in the same manner as peas-haulm and litter do in gardens; secondly, by keeping off the frosts, and consequently by hindering the enemies to vegetation; thirdly, by becoming as it rots, and consequently in the months when it is least needed as a cover, a manure.

I might also add, that the old grass, before it is much decayed, attracts the nitre, &c. in the air, and commu-

nicates it to the roots, and consequently thus (fourthly) promotes vegetation of the *new* grass.

Mr. *Mills's* mistake on this subject must arise from an inattentive view of a pasture in the early months of spring, in part of which the *old* grass is uneaten, and in others eaten. The latter will appear more verdant, and may induce a superficial observer to conclude, that the eating off the old grass has promoted vegetation. But if this enquirer would look among the old grass, he would certainly find the young grass there in a more forward state than elsewhere: or if he has not curiosity to do this, a little time will shew the difference, the new grass soon appearing much more vigorous, in the places where the old grew, than elsewhere.—So true is that axiom, well known to countrymen, that “grass turns to grass.”

The farmer who is obliged to cut off his winter-grass close, is much to be pitied, especially if his land be cold; but he who is not obliged thus to cut it, and cuts it off in consequence of an erroneous opinion that he manages well, is to be *instructed better*. Indeed I never met with this error of Mr. *Mills's* before, either in *practice* or *theory*, to the best of my memory.

I am, GENTLEMEN,

Your most obedient servant,

East-Newton,
October 25, 1764.

THO. COMBER, jun^r.

* We should take it as a particular favour if Mr. Comber would give us a more particular account of the barley manufactory established in his neighbourhood, and inform us of the prices of the various implements and works of husbandry in Yorkshire. E. O.

NUM-

NUMBER LXVIII.

A Review of the different Accounts given of Timothy-Grass in the Museum Rusticum, with Reflections thereon.

GENTLEMEN,

OLD and wise people tell us, "We ought to wonder at nothing." Indeed experience shews, that as opposite accounts are given of the same *facts*, nay, the same *animals*, and even *vegetables*, as of the same *speculative opinions* in *divinity*, *law*, and *physic*.

People *take party* in matters of *natural*, as well as *political* or *supernatural* history; and zeal mingled with *ignorance* or *science*, *inattention* or *accuracy*, in various propositions, produces as various and amazing doses as an apothecary's shop can afford.

The various accounts which are given in your work of the now-celebrated *timothy-grass*, afford a remarkable instance of this kind. I will take a brief review of them, and add such short reflections thereon as they seem to deserve.

I. A member of your society for the encouragement of arts, &c. is the first who appears on this subject; and he tells us (Vol. I. Numb. LII. page 233.) that the *timothy-grass* delights in a *wet* or *moist* soil, has roots which run like couch-grass, and *mat together*, and form a coat able to bear cattle on boggy ground. He thinks it, *perhaps*, not the *sweetest*, but *fittest* for *boggy ground*, and *entirely* to be excluded from *upland pastures*. He mentions its flourishing with Mr. *Rosque* on a swampy ground.

II. Hereupon one of you, in a note at the bottom of the page, desired a *more particular* account of this grass from any gentleman, and particularly from Mr. *Rosque*.

III. The next thing on this subject, which appears with you, is a letter from Mr. *Corbett* to Mr. *Rosque*, founded on the

the letter last mentioned, and only containing queries, which Mr. *Rocque* allows you to publish his answer to, viz. that he knows little of it but by report; that it grows quickly, for, being sown in *September*, it appears in *December* a strong turf as of ten years old; that a root of it, brought from *Lincolnshire*, grew in a quarry, till its stem was two feet and an half high, and its ripe seed larger than that brought from *Virginia*. (See the same Volume, Numb. LXX. and LXXI. page 306—310.)

IV. The next thing which occurs on this subject, is a letter from another member of your society, (Vol. II. Numb. XVIII. page 60, &c.) which is a critique on his brother member's letter. He affirms that gentleman to be wrong, in supposing that the grass in question is not the *sweetest* or *best* that can be cultivated; and relates an experiment of sowing one quarter of a piece of ground with *lucerne*, another with *saintfoin*, a third with *clover*, and the last with the grass in question, and turning on to all, at a proper growth, *horses*, *black cattle*, *cows*, and *sheep*, all which eat the *timothy-grass* bare before they touched the other.

He supposes this grass a native of *Virginia*, and carried thence to *North-Carolina* by Mr. *Timothy Hanson*, from whom it has got its name. He adds, that it *thrives most* on *low marshy grounds*, and in three weeks from sowing produces a fine turf, is very luxuriant, grows very high, has a *broad blade* or leaf, and looks somewhat like *wheat* or *rye*; makes excellent hay, if mown in full sap, and vegetates all winter, and even when covered with water. One of you, gentlemen, observes, in a note, that this grass seems to thrive as well on *dry up-lands* as elsewhere.

V. A correspondent, who signs himself *A Friend to the Public*, (in Numb. LVI. of the same Volume, and p. 160.) asserts, that he is assured that Mr. *Hanson* brought the seed of this plant from *New-York*, not *Virginia*, yet doubts not but it is cultivated there, as it is also in *Pennsylvania*, where it is cut several times in summer for green fodder, and reckoned *wholesome*, *sweet*, *nourishing*, &c.

VI. I

VI. I met with nothing else soon in your collection on this subject. But I well remember (though your Index does not, I think, enable me to find where) that *Rusticus* calls *timothy-grass* a *rank weed*.

VII. But, gentlemen, your correspondent R. W. (in Numb. XXI. Vol. IV. page 94.) writes most to the purpose. He gives many thanks to the gentleman of *America* and Mr. *Hanson*, for teaching us *Englishmen* the use of this grass, a *wild native*, as he says, of every county with us. He adds, that it will thrive in any ground which wants not *earth* and *water*; that it takes root at its joints, like quick-grass, forms a sward in a few months, yields the *most plentiful* and *sweetest* crop, either in hay or pasture, being beyond comparison with *lucerne* or *burnet*, and is called *cat-tail grass*.

One of you, gentlemen, in a note on a subsequent piece, observes, that this seed is rather best to be sown on a low, damp, marshy soil. And now, having given as just and as full an account, as an epitome will admit, of what has been advanced on this subject in your collection, I shall make such brief reflections thereon as seem necessary.

1. It seems sufficiently authenticated, that *timothy-grass* is a native of *England*.

2. It seems indisputable, that *timothy-grass* thrives extremely well on low marshy grounds.

3. It seems scarce disputable, that it thrives also very well on dry up-lands.

4. The authorities for its being a *plentiful*, *nourishing*, and *sweet* grass, are very strong.

5. It seems to have many advantages over almost every other sort of grass to lay down ploughed grounds withal.

6. The description which the learned *Parkinson* gives of "the greatest cat's-tail grass," or "*gramen typhoides maximum*," agreeth very well with that which is above given of *timothy-grass*, viz. "It groweth up with fair
" large leaves like wheat, and stalks two feet high, on
" which stand long round spiked heads, almost of an
" equal bigness and roundness from the bottom to the
" top:

“ top: yet sometimes it is found with stalks three or
 “ four cubits high, and the spike somewhat shorter and
 “ smaller to the top.”

7. Yet, perhaps, the *timothy-grass* may be meant by that writer's second species, viz. “ the most common
 “ cat's-tail grass,” or “ *gramen typhinum medium sive*
 “ *vulgatissimum*,” which he describes as “ most common
 “ in our more barren grounds, and differing from the
 “ former only in *smallness*; its stalks being not much
 “ above a foot high, and the round spike about two or
 “ three inches long.”

8. Persons who have opportunities of seeing Mr. *Rocque's* timothy-grass, would do the public a service by informing them, through the channel of your collection, how far that grass agrees with either of these species, and with the descriptions which more modern botanists give of the several species of the “ *gramen typhinum*, or “ *typhoides*.”

I sent you, gentlemen, on the twenty-ninth of *January* last, a packet of papers, which, I hope, you received *. I have some few others ready for your service; but as the *timothy-grass* seems an object highly deserving public attention, I would postpone it to no other.

I am, GENTLEMEN,

Your faithful servant, &c.

East-Newton,
 March 21, 1765.

THO. COMBER, jun.

* We received the packet mentioned by Mr. Comber, and are much obliged to him for it.

NUM-

GENT

A Some years since, I have added four columns to it, and how man in the navy, not only weekly but annually,

I have. If you think it will be agreeable to your readers,

am, GENTLEMEN,

March

Your humble servant,

Y. Z.

Royal Navy.

Days.	Articles.	Per Week Value.		Rates.	Per Annum Value.		
		<i>l. s. d.</i>	<i>s. d.</i>		<i>l. s. d.</i>		
Sunday	Bread	0 0 7	0 1	per lb.	1 10 4		
Monday	Beer	0 0 7	0 1	p. Gal. W. M.	1 10 4		
Tuesday	Beef	0 0 8	0 2	per lb.	1 14 8		
Wednesday	Pork	0 0 5	0 2½	per lb.	1 1 8		
Thursday	Peas	0 0 0½	2 6	per Bushel	0 0 5½		
Friday	Oatmeal	0 0 0½	4 0	per Bushel	0 1 7½		
Saturday	Butter	0 0 1½	0 3½	per lb. Av.	0 5 8½		
	Cheese	0 0 0½	0 1½	per lb. Av.	0 4 1		
		0 2 5½		Fifty-two times is	6 8 10½		
The Cheese,					0 1 0½		
Which brings the annual Value to					— 6 7 10		

P. S. In, as above: they all concur in this, that the quantity of preservation of his health.

VOL.

NUMBER

NUMBER LXX.

On the Culture of Lucerne by Transplantation, with a Hint or two relative to Burnet.

GENTLEMEN,

AS the letter I wrote to you lately, chiefly on the culture of *burnet*, has gained a place in your useful work, I am tempted to send you my sentiments on the culture of another very valuable grass, I mean *lucerne*; of which having seen, read, and heard much, I determined to have some of it myself; and Mr. Miller's method seeming to me by far the most rational, I resolved to follow it: accordingly, the seventeenth of July, 1763, I ordered a field of three acres and a half, then under rye-grass and clover, to be ploughed deep, and sown with turneps. The crop was middling: I sold them to a cow-farmer for nine guineas: he drew and carted them home. If I had had sheep, I would have fed them on the field.

By the twenty-seventh of March, 1764, the field had been twice ploughed, the first time ten, and the last time near twelve inches deep, with the Rotheran-plough and four horses a-breast: the soil is light and stoney, with a rock of gravel about ten or twelve inches deep, and had never before been ploughed above six or seven inches deep; however, I knew it was right to go as deep as I could for a tap-rooted plant, as the lucerne is.

Here I must inform you, that about this time my book-seller had recommended to me Mr. Mills's Complete System of Husbandry, and sent me the three first volumes. I was greatly pleased with reading Monsi. Lullin's account of his method of transplanting lucerne, and determined to follow it, from a full conviction that it must be superior to every other method.

Accordingly I ordered the field to be sown with Poland oats, and laid out about twenty-eight rods in beds four

R 1 2

feet

feet wide, alleys one foot and a half, which were sown with lucerne in broad-cast by my gardener, in the same manner as you sow cabbages or favoys in seed-beds: one bed, however, out of curiosity, I ordered him to sow in the following manner.

Run a garden-line through the middle of the bed from one end to the other; draw a small drill along the line, about half an inch deep; then move the line six inches, and make another drill, and so on: by this means you will have nine drills on a bed four feet wide. When this is done, fill a quart or pint bottle near full with your lucerne-seed, cork the bottle, bore a hole in the cork, and insert a quill cut at each end: this will be found a great assistance in sowing the seed thin and regularly in the drills*: and I must observe, that the bed which I sowed in this manner, afforded me much the greatest quantity of plants, and by far the finest. Another advantage attending it is, that it is kept clean with much more ease, and far less expence; for a gardener, with the small three-inch hand-hoe, will clean a great deal of ground in a small space of time. When the bed is sown, the seed must be covered with care: rather chuse the backside of a small rake than the teeth.

By the middle of August, my plants looked very well, and were mostly in bloom, when I ordered them to be mown, and given to my horses and cows, who seemed as if they had a high treat.

The oats being got in, I ordered the field to be deep ploughed again, and then waited for a season of rain to begin my planting, which by my journal did not come till the fifteenth and sixteenth of September last; and the field being first well harrowed, we went to work the seventeenth, and continued planting till the twenty-ninth; nor can I now see any difference between those planted the seventeenth

* The quill must be of the largest sort, a small tin tube. such as seedsmen use to tap sacks of small seed to draw a sample; or a hole in the cork, of such size as will let the lucerne-seed pass freely: any of them answer the purpose. Mago.

seventeenth or twenty-ninth. Though I quite agree with the author of the *Essays*, that it is best to plant soone: than I did if possible, yet I must observe, that what may do for gardens, or small pieces of ground, will not do for fields. From the last week of August to the middle of September, seems to me a very proper time. But “filling each hole with water, making drills, half filling them with sea-sand or wood-ashes, and watering each plant,” as the author of the *Essays* mentions, is an endless and very expensive work.

For my part, I kept my eye on *Monf. Lullin's* directions, as laid down in *Mills's Third Volume*, page 259. as to that part that relates to planting; but an illustrious correspondent of *Mr. Mills's*, in *Lincolnshire*, having cautioned the public against planting on ridges, I must needs say I was fearful of the rain and frost myself, if planted in that manner, especially on light land; and therefore I ordered my field to be ploughed as level as possible, and made my man, after the field was ploughed, go three bouts on each side the furrows, so that, when harrowed a-cross, you could hardly tell where they were. the field being brought to this order, as I said before, we began to plant the seventeenth of September: two men with spades dug up the plants, and two women cut them: some care is certainly required in taking them up, but I did not find it great; it was done by common labourers. The women were ordered to cut the plants to about six or seven inches long in the root, and the tops to about two inches, as *Monf. Lullin* directs. They did it very handily: their method was to take them up one by one, (so that they could throw by the faulty ones) and when they had about a dozen in their hands, they cut them at top and bottom with one stroke of the knife at each end. Each had a washing-tub by her side, filled to about six inches with water: as they cut the plants, they set them in the tubs; and as they filled one tub, another was brought them*.

The

* To such gentlemen as intend to transplant lucerne, I would recommend the beginning to take up and cut the day before they begin

The method of planting is the same as for cabbages : men who are used to work in gardens will do it very handily with a dibble or planting stick ; but that mine might stand with all possible exactness, each man had a garden-line and reel : and as I think I shall be very able to keep them clean with Monsi. Lullin's single cultivator, the rows are only twenty inches apart, and six inches in the lines. If I find a difficulty in keeping them clean in this method, then by drawing every other row, which may be done with great ease, my plants will stand at the distance directed by Monsi. Lullin, of three feet four inches.

I was very impatient to see the effect transplanting would have ; and therefore, as soon as my plants in the feed-bed were about six inches high, I drew several, cut and transplanted them, and in the autumn I took up these plants, and found they had all formed new tap-roots round the bottom of the piece (if I may so call it) planted, and instead of one, they had from five to thirteen new roots : this, you may suppose, gave me great pleasure, and convinced me that the illustrious Swift was quite right.

The author of the *Essays*, I find, cut his plants with scissars : this must be very tedious work ; and, with submission, I think he is quite wrong in cutting his plants to the length of nine or ten inches. Six or seven inches seems to me a much properer length ; for the ground being dug or ploughed about twelve inches, the new roots will have five or six inches of well-loosened mold to strike into, which must be a great advantage to the plants ; and if gravel, or a strong clay, is near the surface, I am convinced mine, or rather Monsieur Lullin's, is the best method

Yet this gentleman (see page 259. of your Third Volume) says, he cut his tap-roots too short, and knew
not

begin to plant, for I observed the plants received great benefit by standing all night in water.—Observing this method with my burnet-plants, when we begun upon them, I was surprised the next morning to find them all turned black ; however, I ordered some of these plants to be used, but most of them failed. This served to confirm my opinion of burnet's preferring dry land. MACO.

not how to manage a root that was very small: in regard to the last, I must observe, that, if they were *very* small, I ordered them to be thrown away. So much has been said on the necessity of keeping lucerne in broad-cast, drills, or transplanted, free from weeds, that I will say nothing on that subject.

At the same time that this gentleman so warmly recommends Mons. Lullin's method of cultivating lucerne by transplanting, he has, I fear, thrown a stumbling-block in the way of *most* gentlemen, and, I think, every farmer; I mean his calculation of the expence: this therefore I must endeavour to remove.

When I began to cultivate lucerne in this manner, the only defect I could find in Mons. Lullin's account was, that he had not told the public how much ground they were to set apart for a nursery: this deficiency, however, I can supply to those who come after me, for sixteen rod will be about the quantity for an acre; and then I think the expence of transplanting will stand as follows:

	l. s. d.	
Digging, spit-deep, sixteen rods, at three-pence <i>per rod</i>	—	0 4 0
Seed, three pounds, at one shilling <i>per pound</i>	—	0 3 0
Weeding the nursery twice with the three-inch hand-hoe—(By sowing in this manner, trans- planting will not be wanted; nor do I think it proper, as they are to be transplanted again)	—	0 3 0
Ploughing	—	0 10 0
Transplanting	—	1 5 0
Hand-hoeing the plantation once, the middle or latter end of October, in dry weather, which men used to hoeing turneps will do for three or four, but say	—	0 5 0
		2 10 0

This, I am persuaded, is the full expence of *making the plantation*; yet the author of the *Essays* has strangely
VOL. IV. No. 20. S s worked

worked it up to six pounds twelve shillings *per* acre: however, I readily submit this account to the inspection of every farmer and every gentleman in the kingdom, conversant in matters of this kind.

If the spring-ploughing for barley or oats has been nine or ten inches deep, then a ploughing in autumn of twelve inches will be sufficient, and cannot be charged at more than ten shillings. The trenching for the seed-beds may be done at leisure time; so may the weeding of the nursery, and the hand-hoeing of the plantation: then the real expence to the farmer will be only the seed and transplanting, or one pound eight shillings *per* acre.

As to what this gentleman calls the yearly charges, I can by no means agree to them; for the plantation having been weeded in October, will lie very safe and well till the latter end of February or beginning of March: then, in dry weather, it may be hand-hoed again, the expence of which has before been charged at five shillings *per* acre; to which add four horse-hoeings after each cutting, at eleven shillings, which makes sixteen shillings *per* acre the annual charge*.

I cannot recollect any thing further that is necessary to be said on the subject of *transplanted* lucerne; but as I would have every one, who writes to you on subjects of this sort, tell the truth, the *whole truth*, and nothing but the truth, so I think it but just to say a word or two on lucerne sown in broad-cast, or Mr. Rocque's manner. I told you, in my former letter, I lived within a few miles of Mr. Rocque; and must add, that I have paid great attention to the culture and growth of lucerne and burnet for some years past; so that I think I am pretty well acquainted with them.

The author of the *Essays* says, (see page 264. of your Third Volume) "If lucerne is sown broad-cast with corn, no care can keep it clean: it may last two years, only one crop being tolerable, and then must perish in
" the

* The expence for dung I leave the farmer to rate as he thinks proper. MAGO.

“the common course of nature.” And several of your correspondents are also of opinion it will never succeed in this method; but I know it will, for I have seen it cut three and four times. To cut it four times, the summer must be very favourable, and the last cutting will be late. Here I must remark, that lucerne is not only excellent as a green fodder, but as an early one, especially if sown in drills or transplanted; for that sown in broad-cast will not be fit for cutting so soon as the former, by a fortnight or more; however, the farmer may depend on three good crops in this manner of sowing.

In the spring, 1760, Mr. Rocque sowed about five acres with lucerne and barley: the land is light and hot, but being in good heart, the barley was rank, which obliged him to mow it green, and sell it to a farmer for feeding cows, &c. Indeed I believe it will always be best to do so; for the weeds, if there are any, are thus cut down, and the lucerne thrives apace. The spring following, it may be harrowed with light harrows, and every year after with such harrows as you find clean it best. Last autumn, when the weather was hot and dry, I saw a farmer harrowing Rocque's field with large ox-harrows, and I do not perceive that it is at all hurt. The weeds and trumpery were raked up, and carted to a dunghill, with which he has this spring dressed his field; and it is now in a fine thriving condition.

Lucerne makes most excellent hay: horses are very fond of it, and with one quartern of oats, I will be bound, any gentleman will be well satisfied with the condition of his horses, even coach-horses; nor do I see it is at all more difficult to be made into hay than clover.

Since I wrote my former letter, Mr. Rocque has published, or rather republished, his account of lucerne, of which there is an ample account in your First Volume, page 339. for I see no important addition. He has added some hints on burnet and timothy, which are thrown about in a very irregular manner.

I shall take the liberty to add a word or two on *burnet*; but as to his bitter and dead earth, I confess I do not

understand him. It is very refined indeed, and I think, from all I do know of this matter, he is out of his element. However, I think, we are pretty well agreed on the culture of burnet: for my part, I am convinced that dry land suits it best; and though Mr. Rocque has directed its being sown in April, May, or June, yet at the close of his pamphlet, page 55. he says it is best to sow it in August: he says, "Plough the land which you propose for burnet in the spring, and sow the seed in August;" and adds, "It will grow all the winter:" this I know to be a fact, though the growth is then but small.

He admits the spring-sowing to be uncertain, and I have found it so, unless you sow early, as the beginning or middle of March.

But though we agree thus far, I differ greatly with him when he says, that after the burnet has been threshed for seed "*it makes excellent fodder*:" this I cannot admit, for I know it makes *very bad fodder*. I admit that his horse may pick here and there at the stack; but I know that, when put in their racks, few horses will touch it; and for a proof of this assertion, I could appeal to a certain noble lord, a warm friend to every improvement in husbandry.

I do not say that neither horse or cow will eat it *at all*; I allow they will eat it; but so far from being excellent fodder, I say it is very indifferent, strong, coarse, ordinary fodder, and must be so in the nature of things; for burnet, when left to feed, grows very strong and sticky; but if cut in the month of May; when in bloom, it makes very fine hay: this method I therefore recommend to every gentleman and farmer; for by this means they may have two good crops of hay and good winter-feed; therefore, by no means let it run to seed, if you mean it for hay.

There are several things in Mr. Rocque's hints on burnet that well deserve notice, particularly what he says of the horses at Lord Uxbridge's, that three acres would more than maintain six horses, and that on a very in-
different

different gravelly soil; ample encouragement for the cultivating burnet!

I have no practical knowledge of timothy, but have taken great pains to be informed of its virtues, and intend to cultivate it next year*.

I am, GENTLEMEN,

April 8,
1765.

Your most humble servant,

MAGO.

NUMBER LXXI.

A Letter from Mr. Sutton concerning an extraordinary Phenomenon observed on a Plant, an Account of which was inserted in the First Volume of this Work.

GENTLEMEN,

AS I find many of your readers seem to doubt the veracity of an account relative to the quick-silver issuing from the pores of a *chrysanthemum*, inserted in your First Volume, Numb. LXVII. page 298, I think it justice to the gentleman (who so obligingly lent you his name upon so particular an occasion) to say, that I also saw this *chrysanthemum* in the state mentioned by the relator; and that Mr. *Taylor White*, *Counsellor East*, of Lincoln's-Inn, and Mr. *Thicknesse*, high master of St. Paul's, were present, and not only saw, but examined the plant, and believe the fact; therefore, while men of such respectable characters, in every respect, as the above, will maintain it, I think that neither I, nor the first relator, need be ashamed to subscribe to it, which I am at all times willing to do,

I am, GENTLEMEN,

Your humble servant,

ROBERT SUTTON,

* We esteem this piece a very valuable present, and hope to receive many such from this gentleman. E.

NUM.

NUMBER LXXII.

A Letter sent to the Editors, with Specimens of the Common Poa, the Great Poa, the Vernal and the Yellow-Oat Grasses.

GENTLEMEN,

THE society for encouraging arts, &c. has, for several years past, advertised premiums for gathering by hand the seeds of particular grasses, in order, I presume, to promote the growth of them separately: I am, however, apt to think there have been few claimants for these premiums, as many, who would willingly have been candidates, knew not the grasses by the names mentioned in the advertisement.

It is true, the society did refer to Mr. Stillingfleet's tracts, and Mr. Mills's Husbandry, for delineations of the grasses; but, if I mistake not, there are some kinds advertised which are not delineated in either of the above works; therefore, with respect to them, the candidates must, of course, be totally at a loss.

The common poa, or meadow-grass, is not, I think, delineated in the above works: of this therefore I send you a specimen, (see plate II. fig. 7.) which, with many others of the same kind, I gathered in a meadow near Hampstead, about the twentieth of May last. I, at the same time, gathered some specimens of the great meadow-grass, or poa, one of which I send you, (see plate II. fig. 6.) as also a specimen of the vernal-grass, (see fig. 3.) which I found in the same field ten days before.

About the tenth of June following, some business called me to Hornsey, where, in an upland grass-field, I found plenty of the yellow-oat, (see fig. I.) of which I enclose you a fine specimen.

This last-mentioned grass is not uncommon in good meadows, according to Mr. Stillingfleet, who has wrote more sensibly on grasses than any one I know of; and indeed I believe he was the first who gave the hint of cultivating

tivating the several good grasses separately, as we do the several sorts of grain.

I should be glad if you would get the grasses herewith sent to you engraved, and inserted in your work, for the benefit of the candidates for the society's premiums, as I am of opinion that the specimens will prove to be the true kinds; for I did not depend on my own judgment, and that of my friends, but took an opportunity of comparing them with the specimens preserved in the society's repository, and found them to agree.

I am, GENTLEMEN,

London,
August 20, 1764.

Your humble servant,

CLERICUS.

NUMBER LXXIII.

A Letter to the Editors, relative to the good Grasses to be met with in England.

GENTLEMEN,

I Have received so much pleasure, and I may add profit, from your work, that I am at length determined to become myself a contributor to it.

Having read some time ago Mr. Stillingfleet's observations on grasses, I was induced to make a collection of them: this I actually did last summer, and have now by me some curious specimens.

I have enclosed specimens of all the grasses advertised by the society for promoting arts, and should be glad to see in your work a good engraving from them*.

I am

* Imagining it would be agreeable to our readers, we have given with this Number a fine engraved plate representing all the English grasses for which the society advertises premiums. We join with our correspondent Londinensis in thinking all the specimens genuine, except the fine bent, of which we entertain some doubts; not because it differs from Stillingfleet's delineation, or the society's specimen, but for some other reasons, which we shall at this time omit mentioning, leaving it to be determined by our botanical readers. We must, however, observe, that the specimen sent by Mr. Comber for this grass agreed with that of Londinensis, and of another correspondent. E. R.

I am inclined to think you will find them all genuine, and shall now mention to you the times at which they were gathered.

The annual poa (see plate II. fig. 8.) I gathered on the sixth day of May last, in a gentleman's paddock, near Battersea. The same day I found plenty of the meadow fox-tail, of which I send a fine specimen, (fig. 9.) in a meadow in the parish of Battersea, near the Thames-side.

A few days afterwards I took a walk to Clapham, and found in a meadow there plenty of the vernal-grass, (see fig. 3.) with some meadow fox-tail, and large quantities of the great poa.

I found also much of the vernal, towards the latter end of the month, in a grass-field near the town of Highgate, at which time and place I gathered the common poa and the sheep's-fescue. (See fig. 4.)

On the first of June I found, near Morden, the crested dog's-tail in great plenty, (fig. 2.) a remarkably fine specimen of which accompanies this letter, together with some purple-fescue, (fig. 5.) or meadow-fescue, as it is sometimes called. Just as I was coming out of the field, I also met with some fine bent (fig. 10.): this last specimen differs in some respects from Mr. Stillingfleet's delineation; yet I am inclined to think you will find it the genuine species. The branches, in this kind, in spring, whorls from the main stem, and it is a very delicate grass.

The yellow-oat (fig. 1.) I did not find till the tenth of June, when I met with it in a corner of Barnes-Common, together with some sheep's-fescue. I have not leisure at present to enlarge any more on this subject, which is the more unnecessary, as Mr. Stillingfleet has already said enough to excite the attention of the public towards so capital a branch of agriculture as the improvement of our pastures. Believe me, GENTLEMEN, with great truth,

Your sincere well-wisher,

Jan. 23, 1765.

LONDINENSIS.

Museum Rusticum, &c.

For M A Y, 1765.

VOLUME the FOURTH.

NUMBER LXXIV.

*An Answer to Mr. Scott's Letter inserted in this Volume,
Numb. XLIV. Page 189, containing some excellent
Observations on laying down Land in Grass,*

GENTLEMEN,

I Am so much pleased with the spirit of your correspondent Mr. Scott, that I cannot refuse giving him the best advice I am capable of; nor would I have him say the *Museum Rusticum* has brought him into a scrape, and there left him, without any attempt to help him out.

The ignorance, of course conceit and obstinacy, of many farmers, is too notorious to be denied; and whoever endeavours to overcome it, does a public service to his country: glad shall I therefore be, if I can enable Mr. Scott to conquer one head of this formidable hydra, though I hope, in this instance, it will be attacked by more able champions than I am.

For my part, I have long been of opinion, that it is more proper to sow grass-seeds in the autumn than the spring: I have reasoned thus with myself.

VOL. IV. No. 21.

T t

The

The returning sun puts the whole vegetable world in motion: as it advances, they are brought to perfection, and their seeds being ripe, the rough autumnal winds spread them over the face of the earth.

This is certainly the common course of nature, and, I believe, pretty generally allowed. If authorities were necessary, I think I could quote several, but will only mention, at present, Dr. Elliot, of New-England, who, in his *Essays on Field-Husbandry*, speaks of a grass, called black grass, being brought there by an old boat, which was cast on shore, and had over-run the adjacent fields: now, if we admit that the seeds of this grass were brought by the boat in the spring, it must be allowed that they were blown about the land, when ripe, in the autumn, and by that means spread themselves.

What is the consequence of foul hedges on a farm? Are not they over-run with couch-grass, and variety of weeds, the seeds of which are blown about the land by strong autumnal winds?

But not to carry this reasoning too far, I shall only add, that Mr. Miller, and many others, are warm advocates for an autumnal sowing of grass-seeds; but as I am fond of the truth, and the whole truth, I must remind Mr. Scott, that a correspondent of yours, viz. *Rusticus*, p. 322. Vol. II. strongly condemns this manner of sowing grass-seeds.

However, notwithstanding what this gentleman has asserted, I still hold my own opinion; for I have frequently observed, when I have been removing or planting trees in the autumn about my fields, that the broken ground having been raked over, and a few hay-seeds sown, the grass has generally been very fine, the spring following, on these spots.

From observations of this kind, and the reasoning above referred to, I have often recommended an autumnal sowing of grass to the farmers in my neighbourhood; but their answer has generally been, *It may be so, Sir; but why don't you try it yourself?*

As this had been frequently repeated to me from one or other, I was determined to hear it no more; and therefore last year, after the hay was taken off a five-acre field, I
I ordered

ordered the plough into it, and directly ploughed up an acre: as the grass was good, I did not care to break up more; and this quantity was fully sufficient to satisfy me, and convince my neighbours.

The method I pursued, and success that attended it, are what, I presume, will be acceptable to Mr. Scott; and therefore, with pleasure, I now give it him, and every one else to whom it may be of service.

The hay being got off the field by the fifteenth of June, it was directly ploughed, and lay six days, when it was ploughed again a-cross, and three days after well harrowed; which brought up a great quantity of turf: this was forked and raked into heaps, which, with the assistance of a little dry furze, were set on fire, and by the next morning we found them reduced to fine ashes, which were immediately spread and ploughed in.

Thus the land lay till the twenty-third of August, when the corn in my neighbourhood being all harvested, I ordered it to be sown with two bushels of rye-grass, two bushels of hay-seeds, which I had collected from a patch in a field that seemed to me to be chiefly the great or the annual meadow-grass, and had stood to be ripe: there was also a small quantity of vernal and fox-tail grass, which I had gathered as I walked about the head-lands of my corn-fields, four pounds of Dutch, and two pounds of broad clover: these seeds were harrowed in with very light harrows, and then rolled with a small roller.

By the middle of September the grass made a very fine appearance, and through the whole winter the verdure was vastly superior to the other part of the field: the latter end of October it was rolled with a heavy roller; this was repeated the beginning of last month, March; and it is now a fine turf, much finer than any I have, and promises very fair for a fine crop of hay. For my part, I am much pleased with my success: the farmers own it is very fine, and say they could not have thought it.

However, I think it proper to caution every one who may be tempted to follow my steps, that, though I have

no doubt of this method succeeding on warm dry lands, yet I am not so certain of the success on cold, wet, strong lands, unless sown something earlier: indeed it is very common for grass-seeds to fail on such land, even from the spring-sowing; and it is also well known that a good crop of barley or oats is often spoiled by the grass in a dripping season.

If Mr. Scott has courage to take my advice, I would have him, as soon as the hay is off the field he is desirous of breaking up, to give it a moderate dressing with lime; and plough it directly; let it lie about a week to dry, then plough it a-crofs, and two or three days after harrow it well, burn the turf as before mentioned, spread the alties, and plough them in. This process, I presume, he may easily finish by the first week or middle of August, when I would have him sow whatever seeds he likes best; for, though I waited till the twenty-third of August, when the harvest was over, which I did with design that the farmers about me should see they might safely then turn down their stubble and sow grass-seeds, yet, in the present case, I would advise Mr. Scott to sow by the first week or middle of August, if he can; and the more so, when I consider the difference of latitude.

If land is foul, a crop of peas in drills, by the frequent hoeings necessary, prepare it well for an autumnal sowing of grass-seeds.

As Mr. Scott is desirous of getting his land into grass again as soon as possible, he cannot, I think, take a better method: no time is lost in the manner I recommend; and supposing it possible to miscarry, his land will be in excellent tilth for a crop of barley or oats in the spring.

The only objection I have to rye-grass (for it makes excellent hay, if cut in proper time) is, that it affords but indifferent after-pasture when sown by itself, owing to its not making a good turf; and therefore I recommend some good hay-seeds being mixed with it; but not the sweepings of a hay-loft, as you mention in a late note*,

if

* If we mentioned the sweepings of a hay-loft, it was not that we, by any means, prefer seed collected in that manner, but

if it can be avoided : rather set apart a patch in a good meadow, and let it stand to be ripe ; then cut and thresh it for seed ; for a farmer, who mows for hay, always cuts his grass before the seeds are ripe : if he lets it stand till then, his hay would be very indifferent indeed ; therefore what can be expected from a hay-loft, but the seeds of weeds, and trash of various kinds †?

Some years ago I laid down a field to grass, by sowing, with oats, hay-seeds which I bought of a London stable-keeper, who told me he always bought the best hay, and preserved his seeds with great care : the consequence of this sowing was, that the year after, when I came to look for a crop of grass, I found my field over-run with weeds of various kinds, which I had never before seen on my land ; and therefore I was forced to plough it up again.

I own I had flattered myself with a fine crop of grass, from the many speeches the man made of the great demand he had for his hay-seed ; but a little reflection on the time of mowing for hay convinced me I had no great reason to look for any thing much better than weeds.

As to Mr. Scott's enquiry of how many rents a farmer should make yearly, I answer, three ; one for expence and labour, one for his landlord ; and one for himself : some there are, however, who do not do this ; but it is certain there are others who do much more ; and I flatter myself, that the *Museum Rusticum* will, ere long, encrease the number.

I am, GENTLEMEN,

Your most humble servant,

April 17, 1765.

MAGO.

but because we as yet know not of any farmer who cultivates the good native English grasses for the sake of their seed ; so that any particular sort is with great difficulty got pure, even in small quantities. E.

† Our correspondent's reasons are very cogent ; therefore the separate culture of our best natural grasses cannot be too much recommended. E.

NUMBER LXXV.

On the Improvements of which Fen-Lands are capable.

GENTLEMEN,

I Much wonder, amongst the many correspondents you have, there are not any (except myself) that touch the least upon the agriculture of fen-lands. It would give me great pleasure to see a letter or two on this subject, by some of my brother fenmen.

.. It is something strange, I think, that so large a track of land should find no-body to take it under their consideration, seeing there are so many gentlemen and farmers every where pointing out methods for the improvements of barren heaths, clay, sand, and all sorts of soil, and none think it worth their while to make any enquiries, or to bestow one thought, about the fens.

.. I am well assured they will pay the best, in proportion to the expence, of any land in the kingdom: and notwithstanding this, what large tracks of fen-lands are there at this present time lying, as it were, a waste, merely from inattention, or (excuse the expression) ignorance, which, were it under proper management, would support many families in a comfortable and creditable manner!

I cannot forbear mentioning one particular track of fen-land, which I rode a-cross last summer, in the north part of Lincolnshire; and that is the isle of Axholme, or Axolme, I know not which.

It appears to me, that this track of land might, in the space of a few years, be improved to a considerable value, and many good farms might there be laid out, from the occupation of which, every town round it (as there are many) in their several branches of trade, would certainly feel the agreeable effects, having their country inhabited, and made fit for use, which is now of little or no advantage to any one.

Where are all my brother *fenmen*? What! are we more stupid than our brother *clods* in the high countries?

Shall

Shall they be able to improve their country, while we stand by and say nothing? No: since there is a general invitation, in the *Museum Rusticum*, of "Come who will" and welcome," let us pluck up our spirits, and say something; for our country, though much despised by many, is none of the worst.

For my part, I have thrown in my mite, and am ready to assist further, if wanted; but as conversation is flat and insipid, and must soon drop, if not assisted, so it is with me.

I should be glad if somebody would advance upon the same subject. I would fain rouse up the spirits of some of my brother *webfeet**, that we may not be thought the only people that have no notion from what principles we act, or are not able to give a reason why we do so, or so; in short, we may soon hardly be accounted rationals†.

I am, GENTLEMEN,

Middle-Level,
April 15, 1765.

Your humble servant,

J. J.

NUMBER LXXVI.

To the Editors of the MUSEUM RUSTICUM.

GENTLEMEN,

THE inclosed curious paper, which I take this occasion of transmitting to you, may amuse and inform your readers: for this reason I send it, that you may publish it for their use. I am, GENTLEMEN,

Your humble servant,

Y. Z.

A Table

* This is a contemptuous term given to fenmen; for formerly, when the fens were almost continually drowned, it was common to say a fenman was an amphibious creature; and that their children were born with web-feet, that they might swim as well as walk. J. J.

† We omitted our correspondent's last paragraph, as it contained only an apology to ourselves, which we think totally unnecessary. We approve much of the subject of J. J.'s letter; and the oftener he writes to us, the more shall we be obliged to him. E.

A Table, shewing the lateral Pressure of Water, from one to twenty Feet deep, in Proportion, and in Pounds Averdupoise, according to Mr. Perry, who stopped Dagenham Breach.

I.	II.	III.	IV.	V.
Depth of Water	The weight of water against one foot, being one, the weight at each foot beneath will be as under.	The weight of water against one foot, being one, the weight at each foot will be as under.	The lateral pressure against each foot in pounds averdupoise is as under.	The same against any number of feet, not exceeding twenty, is as under.
1	1	1	32	32
2	3	4	96	128
3	5	9	160	288
4	7	16	224	512
5	9	25	288	800
6	11	36	352	1152
7	13	49	416	1568
8	15	64	480	2048
9	17	81	544	2592
10	19	100	608	3200
11	21	121	672	3872
12	23	144	736	4608
13	25	169	800	5408
14	27	196	864	6272
15	29	225	928	7200
16	31	256	992	8192
17	33	289	1056	9248
18	35	324	1120	10368
19	37	361	1184	11552
20	39	400	1248	12800

Note. This table supposeth the lateral and perpendicular pressure to be equal, and that a cubical foot of water weighs sixty-four pounds, averdupoise.

	lb.	oz.
At Barking, in Essex, in 1763, the cubic foot of dry brick-work was found to weigh	—	102 0
Of wet ditto	—	104 0
Of rammed clay	—	113 0
Of river water	—	63 12
Of Portland stone	—	141 8
of the like weight.		

EXPLA-

EXPLANATION.

The table is twofold, shewing the lateral pressure of water, first in proportion, and secondly in pounds averdupoise; and this not only against any number of feet taken together, but also against each particular foot; and consists of five columns.

I. Column the first, denotes the depth of water from one to twenty feet.

II. Column the second, how much more, or what proportion the pressure against each foot beneath or under one, bears to that against one.

III. Column the third, what proportion the pressure against any number of feet, to twenty, bears to the pressure against one.

IV. Column the fourth, what the weight of the pressure against each foot is in pounds averdupoise, *i. e.* one foot wide.

V. Column the fifth, what the weight of the pressure of water against any number of feet, to twenty, in depth, and one in width, is in the same weight.

Note, The depth of water multiplied by two, less one, gives Col. II. The depth of water, multiplied by itself, gives Col. III. Col. II. multiplied by thirty-two, gives Col. IV. Col. III. by thirty-two, gives Col. V.

EXAMPLES.

I. What proportion doth the pressure against the tenth foot in depth, bear to that against the first foot in depth? Ten multiplied by two, less one, is nineteen: therefore it is nineteen times as much. See Col. II. against 310.

II. What proportion doth the whole pressure of water, nineteen feet deep, bear to the pressure against one foot deep? Nineteen multiplied by nineteen, gives three hundred and sixty-one; therefore the proportion is as three hundred and sixty-one to one. See Column III. against 19.

III. The weight of the lateral pressure of water against one foot wide and one foot deep being found, or allowed

to be thirty-two pounds averdupoise, what is the weight of the pressure of water against the tenth foot in depth? Col. II. shews the proportion to be as nineteen to one; therefore nineteen, multiplied by thirty-two, gives six hundred and eight pounds. See Col. IV. against 10.

IV. What is the whole weight of the lateral pressure of water twelve feet deep, and one foot wide? Col. III. shews the proportion to be as one hundred and forty-four to one; therefore one hundred and forty-four, multiplied by thirty-two, gives four thousand six hundred and eight pounds. See Col. V. against 12.

U S E.

The chief use of the foregoing table is to compare the weight of the materials of which any bank or bridge is composed, or by which the flood-gates of any sluice are supported, with the weight of the lateral pressure of the water against them.

General Observations about Banks.

I. The foundation must be so secured, that the water cannot get under it.

II. The materials must be so compact, and of such a texture, that the water cannot get between or through them.

III And then, where the materials of a bank are found equal to, or to exceed ever so little, the weight or pressure of water, and are placed in such form that every part of the bank is equal to the weight or pressure against it, it will restrain the water within due bounds, provided it hath no current, is at rest, and not agitated by the wind.

IV. All banks must be made of sufficient strength to resist the weight of the water, not only when at rest, but also when agitated by the wind, and the shocks of the waves or surges; and be so defended by breast-work, where these are frequent and the current strong, that they may not be liable to be washed away by either; for which purpose, brick, stone, wood, chalk, and fascines, or bays,

are used; and in some places the bank is set back, and a large fore-land left, which is planted with willows or reeds.

V. It is hardly possible a bank should be so situated as to have only or barely the pressure of water to support; and the weakest of those we have would be found, on enquiry, five times stronger than would be necessary for that end only.

General Observations about Bridges.

I. and II. The same as banks.

III. To place them, if possible, in such part of the river, that the opening may be equal to, or exceed the opening of the river below.

IV. If this cannot be done, an allowance should be made for the contraction of the stream by the piers, by laying the foundation deeper in the ground, and lowering the bed of the river between the piers, equal to the space they take up.

V. The ground, under and between the piers and abutments, must be so secured and made firm, by piles, frames and aprons, that no springs or floods can disturb it; and these works, next the stream, should project beyond the piers, and finish under the ground, or bed of the river.

VI. The piers, to the common high-water mark at least, should be pointed, to give the current of water an oblique direction, and break its force.

VII. The openings of the arches should rise higher than the highest flood was ever known to rise, and above the adjoining causeway, where a bridge is built in low grounds, to the end that in sudden floods the bridge may be eased, by the water flowing over the said causeway. But where a bridge is built in a hollow way, or between two hills, the road adjoining thereto must regulate the height; which may be managed by raising the piers, and making the arches, either in the old Gothic way, like a mitre, or semicircular, or elliptic; each of which, if built with such materials as will not crush, and properly disposed

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against

against sufficient abutments, secured as above, will support any weight.

It hath been said that an elliptic is not equally strong as a semicircular arch:—of the same opening, it is not;—but it is equally strong as, and, if properly constructed, possibly stronger than, a semicircular arch of such opening, as the upper segment thereof would describe. An elliptic is a segment of a semicircle supported at the haunches, as many of the Gothic arches are semicircles supported in the middle, and the outer lines of every two of such arches, if continued, would describe a semicircle.

VIII. The width of the bridge must be, in regard to the traffic, of such dimensions as that one or more carriages may pass at a time;—in regard to the water, of such dimensions, that the earth, &c. that is, the whole weight of the bridge, may be more than equal to the greatest pressure of water as will, in all probability, ever come against it; which, if it is constructed on the foregoing principle, except upon the breaking of a frost in great rivers, can scarcely ever equal the pressure against a common sea-bank.

General Observations as to Sluices.

They must be laid so low that the water, in issuing out below, may go directly into the water, without any fall; and in their situation, opening, and building, as to the foundation and flank walls, be managed and guarded, in all respects, like bridges.

Done in the year 1763.

NUM-

NUMBER LXXVII.

On Gelding Rams.

GENTLEMEN,

IN Vol. IV. Numb. XVIII. for February, 1765, page 158. of your *Museum Rusticum*, I met with a letter subscribed S. R. who very candidly offers to the public what he thinks the best method of gelding rams; but as the way we perform that work in this neighbourhood seems less troublesome, and more safe, than his method is, I shall, with your permission, (for the information of him and others) communicate, through the channel of your useful work, the method I have followed for ten years past, and in that time have not had one, out of several hundreds, dropt by gelding; neither do they lose flesh: on the contrary, some of them, that did not thrive before, rather fatten better after, if the pasture does not fail. I think the evacuation of the humours, by cutting the *scrotum*, &c. may be the occasion of it.

What is necessary to be observed, by way of caution, is as follows. When I am about to have my lambs geld, I take dry fresh weather to do it in; for which purpose I defer it until they are about two months old, which brings, at least, the middle of May for that work to be performed in; but, in order to have a settled state of weather, and the moon in decrease, I do it either a little sooner, or a fortnight later, when I judge the work may be done with safety, according to the above caution.

I have the lambs put into a fold that has a good wall, or dyke, about it, by seven or eight o'clock in the morning, or as soon as the dew is off. A man is appointed to stand within the fold, with his back against the wall or dyke, who may be called the holder: another is appointed to take the lambs, one at a time, taking care not to heat them either in folding or taking them.

When

When he has taken a lamb, he brings it to the holder, who takes it by the hinder houghs, and presses its back against his breast, with its head over his shoulder: the operator then, who generally is the shepherd, takes his knife, and cuts about an inch from the lower end of the cod quite off: he then puts one of his hands close up to the creature's belly, while he presses back the cod with the other; and by that means he causes the bare stones to put out, so that he can easily gripe them one at a time with his teeth, and pulls them slowly out.

He then takes a little salt water, which is prepared on purpose, and set near him, into his mouth, and warms it a little; then he squirts it up the cod, and all is done; the holder handing the lamb over the wall, or dyke, to one that sets it on its feet on the other side, pulling its tail pretty hard when he lets its go, which makes it stretch itself out.

Thus, in half a minute, a lamb is gelt; and in three or four days all danger is over, if kept from lying on nettles, and the like.

It is proper to walk the lambs gently about three or four days after they have been half a day gelt.

If old rams are to be gelt, I do it about the same season; and the operator takes no other method than that used with the lambs, only putting a bit of salt and butter up the cod instead of squirting up a little salt water: the holder, indeed, must not now stand, but sit on the ground, griping the ram by the houghs, while he lies on his back, with his head over one of the holder's thighs, &c.

My reasons for letting the lambs be about two months old before they are gelt, besides the reason before given, are, that at that age they are better able to bear the pain of the operation than when they are young and weakly; and the strings, as they are called, are so strong that they do not break, but come entirely out along with the stones, which makes a free passage for matter to issue out by the cod; whereas, when they are gelt very young, as is the practice with some, the *tunica albuginea*, or strings as they are

are vulgarly called, being but weak, they often break, probably occasioning inflammations, &c. which certainly ought to be avoided, if possible. This occasions more to die, when they are gelt young, by the operation, than when cut at two months old.

I mentioned having the moon in decrease when I have my lambs, &c. gelt, which by some, perhaps, will be thought a circumstance not worth notice: but let such only attend to the wonderful effects the luminaries have on fluids, as well the juices of the animal œconomy, as others, when they are in the positions that constitute new and full moon; and they will, I dare say, be disposed to think the hint is not quite impertinent.

The reasonableness of my conclusion is not deduced from argument only, but has the authority of experiment, as follows.

I attempted to geld my lambs, one year, just at full moon: the first lamb that was cut bled very freely; the next did the same. I tried as far as half a dozen, and none of them were otherwise. I then apprehended there was danger, so deferred cutting any more for five days, when there was a great abatement in the bleeding: besides, one of the six gelt at full moon dropt, and none of the others that were gelt five days after did, although they were above twenty times the number of the former (the weather and usage was nearly the same). This, I own, carried conviction enough for me. Those that will not be convinced by my relation of this fact, I, notwithstanding, do heartily wish them no worse luck than I have had in that way; but withall they had as good use circumspection.

I am, GENTLEMEN,

Your very humble servant,

A NORTHUMBERIAN.

Near Belford,
April 9, 1765.

NUM-

NUMBER LXXVIII.

A Method of preventing Hay, Barley, &c. from being Mow-burnt.

GENTLEMEN,

CAN there be a greater subject found than agriculture in all its branches, for laborious men to employ their industry, or men of genius their penetration? It is deservedly a national concern, and not unworthy even the patriot's care; and as your scheme, from the beginning, is so well calculated and pursued, especially for the improvement and pleasure of rural life, it is in some degree the duty of those thus situated to communicate, though it is your province to perpetuate or destroy.

As the smallest improvement in husbandry seems not by you to be neglected, I will therefore mention a very easy method (which probably may not so universally be known as the utility of it deserves) to prevent mow-burnt hay, burnet, barley, or indeed any other grain or fodder, collected together either in stacks, ricks, or bays of buildings; I mean, not being tied up in sheaves.

Mow-burnt hay, barley, &c. are well known; and when it happens to the latter, vegetation is almost, if not totally, destroyed thereby: though the physical causes are not my present attempt; that I refer, if desired, to the ingenious and learned.

Even in a tolerable good harvest, you frequently see a vapour, as it were, arise from the top of stacks, &c. which, if put together too damp, injures it to that degree, as sometimes even to take fire, as various instances too fatally have demonstrated.

To avoid it therefore, prepare a large sheaf, or two sheaves, of corn-straw tied together; and when you begin to make your stack, place the sheaves in the
the

the centre*: and as the stack gradually arises, so must also the sheaves, (or boltings, as they are in Shropshire frequently called) by which method a funnel, or chimney, as it were, will be continued from the bottom, so as to collect and draw up the circumjacent dampness, and discharge it at the top.

When the stack, &c. is thus finished, draw out your sheaves, (and, if out of doors,) cover it with a bottle of straw, previous to the covering or thatching of it.

The benefit of this method I know by experience, and many of my invidious neighbours know the same.

I have heretofore received damage from putting hastily quantities of hay, barley, &c. together; but by this easy precaution, (which does not take up any additional time at all) have avoided the inconvenience and disappointment arising from snow-burnt hay, barley, &c.

I make it a rule that my servants adhere to this method, even in good harvest-weather; for often the husbandman is tempted, in a fine day, to hurry too much. Hay-harvest will soon arrive; therefore I communicate this to you: and, should the honest and industrious farmer receive but the least benefit from what has been said, I have my reward.

Your correspondents should observe, when they write upon practical husbandry, to describe the nature and quality of the soil; for what can be more different than the management necessary to be pursued in cultivating a cold, moist, and perhaps clay land, from a good loamy mixed soil, or a dry sandy one?

Your Berkshire gentleman, who signed J. J. Numb. XXXI. page 141. of this Volume, was rather deficient in this, relative to his queries to make a lawn before his house (the very business I am now engaged in): he should have been very particular also, how long the land had been in tillage, and how treated during that time.

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But

* The same to be observed in any building when a body of hay, &c. is put together, so as to preserve a flew, or funnel, about three fourths of a yard in diameter; but that, in some degree, must be proportioned to the quantity so collected.

But oats, gentlemen, are by no means so proper as barley to lay down a field to grafs, especially when you sow Dutch, or any other clover; neither is rye-grafs so good as well-chosen hay-seeds; for certainly rye-grafs may almost be ranked as a species of couch-grafs.

It is adviseable always to put a quantity of your best hay by itself; by which means I have generally a better sort of grafs-seed to sow than is promiscuously collected from large quantities; and I have long wished Mr. Stillingfleet's doctrine of grasses was more properly adopted: what would be more advantageous than for the society of arts to give a suitable premium, equal to the task, for gathering quantities of such grafs-seeds as they should point out, and to be distinguished by well-dried specimens to as many as sent for them? for a drawing, even with a description, is often imperfect; as one acre of grafs-ground, with proper seed laid down, would exceed nearly two in value; though, at the same time, I am no stranger how much proper management, good manure, and especially seasonable watering of lands, contribute to alter, in time, the very species of grafs.

Writing is not a favourite employ of mine; but if any hints, I happen to mention, seem to promise advantage to the public, they are at your service; otherwise prudence, of course, will direct you to let them remain unnoticed.

I am, GENTLEMEN,

Your humble servant,

Shropshire,
April 16, 1765.

F. R.

NUM-

NUMBER LXXIX.

Caution respecting the Management of Lambs in Snowy Weather.

GENTLEMEN,

I Have often heard it said, that we should profit by our misfortunes : this I have frequently done, particularly, on the occasion I am about to mention.

I am but a young farmer, and, of course, have been, by my inexperience, led into many mistakes.

A few years ago I bought five score lambs, with an intent to keep them for store sheep. I turned them on my lands, where they did very well till the weather happened to be snowy.

As soon as the snow had covered the ground, I began to be alarmed, lest my lambs should be starved, and accordingly ordered one of my men to carry some sweet hay, and lay it in different parts of the field for them to eat : but in this I did very wrong ; for the snow was not yet so deep, but that the lambs could, by scraping with their feet, clear it away, and get at a little grass. This made them refuse the hay, to which they took a distaste : and as more snow afterwards fell, I lost that year no less than thirty-eight lambs by downright hunger, and the rest were with great difficulty saved ; for I was obliged to try many methods of teaching them to eat the hay.

I drew a little twisted hay a-crofs their mouths ; but this, though a common method, had very little effect. I then rubbed some hay till it was soft and silky, putting it into their mouths, and holding them shut : this, indeed, taught a few to eat it, but not many. At last I was obliged to buy half a score old sheep, for which I paid a good price, and turn them in amongst my lambs. As the sheep eat the hay fast enough, the lambs soon followed the example ; and by this means I saved above half my stock.

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My over caution was the occasion of my loss; for, had I left the lambs, without giving them any hay, till the snow had been deep, and they had been pinched with hunger, they would have taken readily enough to eating of hay.

As my loss was considerable, it dwelt on my memory, and I took care never to make the like mistake again; in consequence of which care I have always, of late years, met with success in the lambs I have since bought.

I am sensible, that many of your readers will think that I might as well have saved myself the trouble of writing, as to have sent you a matter of such small consequence; but I hope you, gentlemen, are of a different opinion, as you cannot but be sensible, that by inserting such cautions in your useful work you will do infinite service to young farmers.

I should take it as a particular favour, if some of your ingenious correspondents would inform me in what manner I can best manage a field of fourteen acres on my estate, which has been many years laid down in natural grass. It is but an indifferent pasture: I have therefore thoughts of ploughing it up; but my neighbours dissuade me, because on the south and west sides it is bounded by a wood, and they say that half my crop of corn would be devoured by birds; besides, that my wheat-crops would be hurt by the north-easterly winds, to which the field is fully exposed. The soil is a thin coat of light loam, over a bed of hard gravel; and at the depth of about six feet is a bed of stiff clay, which runs deeper than I have yet searched. The grass of this field is very apt to be burnt up in a dry summer, and in a wet season does not yield so good a crop as one would naturally expect.

I am, GENTLEMEN,

Herts,

Your constant reader,

Jan. 1, 1765.

A. S.

NUM-

NUMBER LXXX.

On the Benefit of Soap-Ashes as a Manure.

GENTLEMEN,

I Do not remember to have seen any thing * in your work on the subject of that excellent manure called soap-ashes; I mean those which are made by the soap-boilers in London.

I have, many years past, received great benefit by using this manure, with which I almost constantly dress my wheat-lands, but never, on account of its hot burning quality, use it alone.

My method is, to make a large heap of dung and earth, that is, two loads of earth to one of dung, placed in alternate layers to rot. After this has undergone a strong fermentation, I cause the whole heap to be turned and well mixed, leaving it some time longer to mellow.

I then procure the soap-ashes, and mix them with the compost, in the proportion of one load of ashes to ten of the compost, leaving, for some time, the whole to mellow together.

When wheat-seed time comes, about the latter end of September, I cause about ten cart-loads of this rich compost to be laid in little heaps on each acre of the land I intend to sow with wheat: this manure is immediately spread, and, sowing my wheat broad-cast, I plough it in together with the compost.

The advantages resulting from this practice on stiff soils are many; and particularly, if the farmer is in the least careful in preparing his tilth, he will have a clean crop, free from smut or weeds; a matter of no small consequence to him.

I have

* Since the receipt of our correspondent's letter, a piece has been inserted on this subject. See Numb. XXVI. page 116. of this Volume.

I have tried this manure on lighter lands, and find it answer extremely well; provided it has lain a considerable time in the compost-heap to mellow and abate its natural heat; but it agrees best by far with clayey soils, and in such is well worthy of being recommended as an excellent dressing for a wheat-crop.

I am, GENTLEMEN,
 Middlesex, Your very humble servant,
 Jan. 3, 1763. A VICAR and LAND-OWNER.

NUMBER LXXXI.

To the Editors of the MUSEUM RUSTICUM.

GENTLEMEN,

I Beg the favour of you to insert * in your work the following letter, which last night appeared in the St. James's Chronicle, and will, I dare say, be acceptable to all your readers.

Your's, &c.

April 21, 1765.

A. M.

An Improvement on the Broad-wheeled Waggon.

AS I understand that something is in agitation at present concerning the act relating to broad-wheel waggons, I beg leave to communicate what I saw to-day, which seems to be a very great, though a very simple improvement, and which I should hope, when known, would soon be followed.

I saw a waggon passing through Highgate, the fore-wheels of which were about six inches wider asunder than the usual distance, and the hind-wheels, on the contrary, were about eight inches nearer each other; the consequence of which was, that the waggon-tracks, instead of nine inches, were full sixteen; and by having made the hind-

wheels

* This would have been inserted last month, but that it came to hand so late.

wheels run eight inches nearer than usual, the track was just of a proper breadth for post-chaifes and all quartering carriages to run in: the fore axle-tree being somewhat wider than usual (as abovesaid) was advantageous in turning, as the wheels did not touch the lock so soon by three inches as in other waggons. If the act ordered all waggons to be constructed on this principle, the great inconvenience observed in some of the northern and western roads would be effectually removed, where, from the perverseness of the surveyors, who lay heaps of stones, and other obstructions, on each side the roads, in order to force all carriages to go in one track, the ruts, which are inevitably made by this management, being but nine inches, are too narrow to afford a good horse-path, and the two tracks or ruts too wide asunder to suit coaches or chaifes—which sets all the country, and all travellers, (who do not give themselves the trouble to examine nicely into the matter) in an uproar against the broad-wheel waggons; but, if this improvement becomes general, it will be a certain cure for the ignorance of some, and the malice of others; for in six months it would remove all the evils complained of, in spite of everything that their bigotry could contrive against broad-wheels for the future.

Totteridge,

B. W.

April 16.

NUMBER LXXXII.

Pliny's Account of the Culture of Rye; with some Observations on that Account; and a comparative View of the Profit of Wheat and Rye Lands in the same Neighbourhood.

GENTLEMEN,

AS I have given general reasons in a former letter, as well as the authority of others, to conclude, that *rye*, when well cultivated, is a crop nearly as profitable as *wheat*, it was natural for me to have the curiosity to look
what

what *Pliny*, who has justly wrote so much about wheat, has written about rye.

I was a little surprised to find his account of it so short and imperfect, that one must conclude he knew very little of the subject.

I will therefore, gentlemen, transcribe that account in his own language, give the sense of it as well as I can, for the sake of your unlearned readers, in our tongue, and add a few short observations thereon.

“ *Id—quod secale—appellatur, occari tantum desiderat.*
 “ *Secale Taurini sub Alpibus Asiam vocant: deterrimum; et*
 “ *tantum ad arcendam famem utile: facundâ sed gracili*
 “ *stipulâ, nigritiâ triste, sed pondere præcipuum. Admisceatur*
 “ *huic far, ut mitiget amaritudinem ejus: et tamen sic quoq;*
 “ *ingratissimum ventri est. Nascitur qualicumq; solo cum*
 “ *centesimo grano: ipsumq; præ lætamine est.*” Lib. XVIII.
 Cap. 16.

“ Rye, says *Pliny*, only requires to have the clods
 “ broken. The people of *Piedmont* call this plant *Asia*.
 “ ’Tis very bad, and only valued as it keeps people from
 “ starving. Its stalk is very slender, but a great bearer.
 “ The blackness of this corn is very disagreeable; and it
 “ is very heavy. ’Tis usual to mix wheat with it, to
 “ take off its bitterness; but even then it very severely
 “ gripes the bowels. It will grow on any soil, and bring
 “ forth an hundred fold. ’Tis used for manure.”

Ist Observation. It appears, gentlemen, from the chapter whence the above extract is made, that rye got the name of *secale*, from its being usually cut down green for fodder.

IId. It may deserve one’s notice and enquiry, whether the people of *Piedmont* gave the name of *Asia* to this corn, as knowing it to come from that famous country; and if so, what accounts we have of it by writers of that part of the world, and under what name.

IIId. *Pinsionius*, in his annotations on the place, thinks we should not read *deterrimum*, but *taterrimum*. However, I own, the difference appears to me very trifling, and even insignificant,

insignificant. It is plain that *Pliny* entertained a very contemptuous opinion of this grain, and was prepared to say any thing that was bad of it.

IVth. It is evident that *Pliny* was disgusted with the blackness of this corn; but it is difficult to know what he meant by the mention of its weight. The more heavy any corn is, the more nourishment it contains, when adventitious moisture is out of the case, as it is here; and yet *Pliny* appears not to have designed to say any thing in commendation of it*.

Vth. The corn which is here said to be mixed with it, seems to me to be *wheat*; for though *far* (the word used by *Pliny*) is made to signify corn in general by dictionary-writers, yet the grain here meant by *Pliny* seems to be *wheat*, because he gives a description of *far* in the Eighth Chapter of this book, which agrees best with this noblest grain, viz. “*Ex omni genere durissimum far, et contra byemes firmissimum. Patitur frigidissimos locos, et minus subactos, vel aestuosos sitientesque.*” Which may be sufficiently explained to the *English* reader by saying, that it bears well the extremities of cold and heat.

VIth. *Pliny*’s complaint, that rye gripes the bowels, is true with regard to some constitutions, and may be so with regard to all constitutions, when it is ill managed in the making into bread, or kept till it be very sour, or over-leavened: but, in general, it is allowed to be only moderately loosening, and therefore healthful.

VIIth. *Pliny*’s character of it, that it grows in any soil, is an high commendation.

VIIIth. I am not, gentlemen, fully convinced, that the meaning of *Pliny*’s phrase, “*Cum centesimo grano,*” is, that it yields an hundred fold; and yet I can give no other sense to it. If *Pliny* meant, that a bushel (or any given measure) would yield in *Piedmont* (whence only, or chiefly, he seems to have taken his observations) an hundred times as much, it seems a produce greatly beyond what it will give with us in its best culture. But if he

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only

* Perhaps he meant to say the bread made of it was heavy. E.

only meant, (as is most probable) that a single grain will yield an hundred, this produce is, I dare say, often exceeded.

IXth. The meaning of the last phrase in *Pliny*, I take to be, that rye is cut down and ploughed in, or ploughed in as it stands, for manure; a method which is both recommended by our modern writers on agriculture, and practised in many places with success.

Xth. On second thoughts, I am inclined to think, that *Pliny* meant the increase of a certain quantity of rye to be an hundred fold; for in the Tenth Chapter of this very book he makes the increase of wheat to be an *hundred and fifty fold*, and rye is *generally* (nay *universally*, I think) allowed to be a better bearer than wheat, at least in our part of the world.

XIth. These assertions of *Pliny*, about the crops of wheat and rye, must lead us modern husbandmen to think *more modestly* of our boasted crops and management, than we are usually disposed to do.

Nothing can be more judicious than the invitation you give to your correspondents to send you an account of the course of crops in their respective counties. Let me add, that they should give you an account of their *soils, management, and crops*: then your readers may be enabled, by attention to these various accounts, either to continue their present management, or to improve upon it.

I design, gentlemen, to give you an account of the course of crops, &c. in two neighbouring places in this county before I finish this letter, in order to evince some other useful truths, but especially this, *viz.* that *rye land*, if well managed, is *nearly*, if not *equally*, valuable with *wheat land*.

But before I begin this account, I shall make an incidental reflection or two on the nature of rye.

I. I have enquired of some sensible farmers, on the banks of the river *Swale*, what their sentiments about feeding down of rye with sheep in spring are; and they answer
unanimously

unanimously, that they are satisfied the practice is *highly beneficial* to their crops, which, having the earth settled to the roots of the plants, and enriched with dung and urine, spread and load better. They add, they have seen fields of rye so eaten down with sheep in spring, that you could scarcely discover a root, or distinguish the field from a fallow one, and yet the crops have been very good.

II. The bread made with rye is so wholesome, that some years ago a foreign physician (whose name I did not know, or have now forgot) wrote an essay in praise of it, under this title, “*De Pane nigro vulgò dicto Bon pour Nicole* ;” the origin of which latter name was owing (as it is said) to a pleasant adventure*.

I come now to relate the different course of crops, &c.

The lands of Nether *Dunsforth*, in the west riding of this county, are, in general, a strong clay, and bear good wheat. The lands at *Helpsby*, a few miles distant, are, in general, a good black loam, which bear good rye, but, on repeated trials, prove too light for wheat, as the most sensible farmers there affirm. Be this as it will, the lands lett at the same prices in both places, viz. at ten shillings *per acre* ; and we shall see that it may be as well afforded, according to the course of their crops, &c. which I learned only yesterday from two sensible farmers, one of them living at the former place, on an estate of my father's, and the other at the latter, and desirous to succeed his companion as tenant to my father.

At *Dunsforth* they have a wheat-crop, a crop of *blendings*, as they are called ; that is, beans and peas, then a fallow, and so round again.

At *Helpsby* they have a crop of rye, then a crop of barley, then a crop of peas, then another crop of barley, and so round again ; and they observe that the peas so

Y y 2

mellow

* A French traveller, who had never seen rye-bread, met with some, I think, in *Switzerland*, and asking what it was good for, was answered, that it was good food for man ; whereupon tasting and disliking it, he exclaimed, “*Bon. bon—bon pour Nicole*,” meaning his horse, which bore this name. COMB.

mellow the ground, that their fourth crop is better than their second.

To bring these crops to a fair comparison, we must say, that the *Dunsforth* men have five crops of wheat, and five of blendings, in fifteen years; and that the *Helperby* men have three crops of rye, three crops of peas, and six crops of barley, in the same space.

To estimate the real value of these crops, without too much nicety, we may suppose that the wheat is, one year with another, worth one shilling and six-pence *per* bushel more than the rye; and that there are twenty-five bushels of wheat and thirty of rye on an acre. We will take the medium price of wheat to be four shillings and six-pence, and of rye three shillings.

			<i>l.</i>	<i>s.</i>	<i>d.</i>
An acre's crop of wheat then would be	—		5	12	6
<i>Ditto</i> of rye	—	—	4	10	0
Difference	—	—	1	2	6

But as the straw of rye is known to be much more valuable, and of greater quantity, and the expence of manure and seed to be less, we may safely deduct

	—	—	0	10	0
So that the real difference of profit, on one acre, will be	—	—	0	12	6

The crops of blendings and of peas may be reasonably considered as on a par.

The difference of profit then betwixt three crops of wheat and blendings on one side, and three crops of rye and peas on the other, will be

— 1 17 6

We are now, gentlemen, to consider the difference betwixt the two remaining crops of wheat and two additional crops of blendings on one side, and the six crops of barley on the other.

l. *s.* *d.*

Supposing the charge of both sides to be the same,
(and there will be no considerable difference)
the two crops of wheat will be worth — 11 5 0
A

l. s. d.

A crop of blendings usually falls betwixt fifteen and twenty bushels to the acre, and the medium price is three shillings *per* bushel: the value of a crop then, at an average, will be seventeen bushels and an half, at three shillings; that is, two pounds twelve shillings and six-pence, and of two crops of an acre — 5 5 0

A crop of barley is usually thirty-two bushels to the acre at the place in question; and the medium price *per* quarter is one pound: the value therefore of the corn of an acre of barley is four pounds, or of six crops — 24 0 0

But the straw of barley is so valuable, that it may be reckoned to exceed the expence of reaping by at least five shillings; that is, for six crops — 1 10 0

I did not enquire whether the men of *Helperry* sow clover with their fourth crop; but they certainly *may*, and reap one good crop in the fallow year, and turn in all their stock for a fortnight or three weeks to feed it down, and have time enough to plough in the roots of the clover, and the manure made by the cattle which eat it, and get their fallow into order; so that we cannot reckon less profit hence than one pound *per* acre; that is, for three crops — 3 0 0

Nay, when one considers, that rye is, of choice, sown late in this country, we may allow a second crop of clover and feeding, which cannot be worth less than fifteen shillings *per* acre; that is, for three crops — 2 5 0

The whole account then will stand as follows.

For the wheat-growers:

By balance of three crops of wheat against *ditto* of rye, and two of blendings against *ditto* of peas — 1 17 6

By

			<i>l.</i>	<i>s.</i>	<i>d.</i>
		Brought over	1	17	6
By two crops of wheat	—	—	11	5	0
By <i>ditto</i> of blendings	—	—	5	5	0
Total	—	—	18	7	6

For the rye-growers :

By the corn of six crops of barley	—	24	0	0
By the straw	—	1	10	0
By clover	—	5	5	0
Total	—	30	15	0
Balance of the fifteen years, in favour of the latter		12	7	6

That is, for one year on one acre, sixteen shillings and six-pence ; that is a profit more than the rent of the ground, and half as much again above the profit of the wheat-grower.

Some inexperienced people, gentlemen, may think that I have thrown more advantage into the scale of the rye-growers than I ought : yet, on the strictest review, I cannot think so ; but that, on the contrary, I have reckoned their advantages too low. I am sure I am not partial, for I own a wheat-crop my *favourite* one, (I having a natural dislike to rye-bread) though I own the rye-ground more advantageous to the farmer. Let us review my account.

Am I thought to deduct too much, when I take off ten shillings for the saving in seed, and gaining in straw, of rye ? Surely I ought not ; for, as wheat is considerably larger than rye, fewer grains fill the bushel, consequently more should be allowed to an equal portion of land : and farmers who sow nine pecks of rye, sow twelve of wheat to the acre. Now the price of the former (according to the reasonable state above) is six shillings and nine-pence ; of the latter, thirteen shillings and six-pence ; consequently the saving, seven shillings and three-pence. And whoever considers the greater length and fineness of rye-straw

straw than that of wheat, must think two shillings and nine-pence *per* acre a very small allowance for it.

Is it thought that more labour in ploughing attends the production of twelve crops than ten? Be it considered, rye-land is *lighter*, and therefore much easier ploughed, than wheat-land; and that, in the course of this wheat-husbandry, the fallow is to be stirred nearly as often as it would be to prepare it for the additional crops; and that, the oftener any ground is stirred, the more easily it is stirred; and that the crops of peas and clover mellow the ground, and make it more easily stirred for the sowing down with hard corn; also, that it lies unstirred every fourth year, from the sowing down of barley to the eating off the clover, about fifteen months. From all which considerations it seems most evident, that the same team and ploughman will, with more ease, work the same quantity of rye-land, to produce its twelve crops of corn, and the clover too, than they could wheat-land to produce the ten corn-crops.

Am I imagined to reckon the expences of seed and manure for two crops of wheat and two of blendings too high, when I put them on a par with those of six crops of barley? As this seems the most exceptionable, I will state the matter somewhat more particularly.

The seed for wheat is three bushels to an acre, which, at four shillings and six-pence, come to thirteen shillings and six-pence; for two crops, to one pound seven shillings. The seed for blendings is four bushels to an acre, which, at three shillings the bushel, come to twelve shillings *per* acre; for the two crops, to one pound four shillings. The seed for the four crops costs then two pounds eleven shillings.

Four bushels of barley sow an acre, and, at two shillings and six-pence *per* bushel, come to ten shillings *per* acre, or, for the six crops, to three pounds. The difference then in the value of the seed in the two methods, is only nine shillings. Now, let it be considered, that the ground is prepared, as to manure, by the rye-crop for the former barley-crop, and by the crop of peas for the latter

latter barley-crop; so that nothing need be charged on this account: whereas, to prepare the ground for the two crops of wheat, the farmer must be at great expence in manure, either in *burning*, or (which is generally much worse) *buying* of lime, and leading it, or at least in leading his own or bought dung; so that the nine shillings saved in the seed will go a very little way in this great expence. Besides, the clover so opens and mellows the ground, and the dung occasioned by eating of it, either at home or in the field, so enriches the soil, that *much*, if not *all*, the expence of manure for a crop of rye is saved; and this allows the farmer to lay his manure, otherwise needless, on to his barley-ground, and improves it for that crop, and the succeeding crops of clover and rye too; and on this account great deductions should be made from the expence of the three rye-crops compared with the three of wheat at the head of this account; so that I am clearly of opinion, that, instead of there being any balance therein in favour of the wheat-growers, it would fall considerably on the side of the rye-growers.

In the last place, am I supposed to take the quantity of wheat on an acre too low? I answer, I take it from the course of the country where the comparison is made; and if greater crops are reaped elsewhere of *wheat*, so are there also of rye.

The last night I was assured, by a farmer on the estate adjoining to this, that he has *frequently* reaped fifty-five bushels of rye off an acre, and his father has reaped as much or more off the land in this estate. I am fully persuaded it will be found, on enquiry, that one sixth in quantity, as I state it, is too little in favour of rye. A stook of good rye usually yields five pecks, or more, while a good stook of wheat, whose stalks are thicker, and bed less close, and make much less bands, seldom yields so much as a bushel; so that, if there be an equal number of stooks, as large as can be made, of each sort, on an acre, there will be one fifth, or six bushels in thirty, more of rye than wheat, *cet. par.* as philosophers speak.

I wish

I wish, gentlemen, that the candidates for the premium of your society for the best account of the culture of *rye*, may be able to advance more useful things than my *experience* has enabled me to include in these two letters.

I could have applied all that has been said in favour of the new husbandry, to the culture of this valuable crop; but I could only have applied them *in general*, as experiments are wanting to ascertain the particular advantage to be hoped for thence.

Fifty-five bushels of good rye will, perhaps, be as much as can be reasonably expected from the drill and hoe on an acre.

I am, GENTLEMEN, (as usual)

Your's, &c.

East-Newton,
Nov. 29, 1764.

THO. COMBER, jun.

N U M B E R LXXXIII.

A View of several Objections against the New Husbandry, with their Confutation; and Remarks on the Opposition made to the Mowing of Wheat.

GENTLEMEN,

I Think the public is greatly indebted to your *sensible, laborious, candid, and accurate* correspondent, E. S. for his letters to remove prejudices against a fair trial of the *new husbandry*; a subject of great importance in a national view of things.

In his former letter (see page 159. and Numb. XXXVII. of your Third Volume) he has fully shewn, from authentic documents, that Mr. *Tull* was not obliged to give up his method in consequence of his ground's being so exhausted as to *produce no crops at all*; an assertion which had been echoed from one part of the kingdom to the other in the loudest manner, and with an air of the utmost confidence; insomuch that (to confess the truth) I had too good an

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opinion

opinion of human nature to apprehend that this assertion would have been propagated as it was, if not founded in fact.

I saw clearly the consequences of a belief of such an assertion, (which, doubtless, the propagators had in view) viz. that if the new husbandry at length reduced the crops to nothing, it must effect a gradual impoverishment of the ground, and consequently have a tendency to ruin both landlord and tenant, and be repugnant to the true principles of agriculture and national advantage.

A clear view of these just consequences made me peculiarly attentive to the perusal of *E. S.*'s former letter; for, though I immediately reflected, that I should be sorry to find so much malevolence in human nature as must reside in the breasts of those who propagate these assertions, knowing them to be false, yet my concern was overcome by the reflection, that, if these assertions were false, there was a prospect of the new husbandry's becoming a great national benefit.

When I had perused the letter, the conclusion I made was, that either Mr. *Tull* must be a knave, or, if *E. S.*'s quotations from his works were just, the assertions above mentioned must be false. I know that Mr. *Tull*'s integrity and benevolence are allowed even by those who differ from his practice; and it is incredible that any man would present the public with such quotations as *E. S.* has done, on such a subject, from books easily come at by people in town, (though I have them not at hand) were they not just ones.

The same thanks which are due to *E. S.* by every lover of truth, for detecting the above-mentioned calumny, are also due to him for shewing (in p. 341. Numb. LXXVIII. of Vol. III.) that Mons. *de Chateauxvieux*'s use of manure does not prove that manure is necessary, in Mr. *Tull*'s method, to secure a continuance of good wheat-crops.

But there has appeared, in the *Gentleman's Magazine* for November last, a letter, which is wrote in so manly, nervous, and masterly a style, on the new husbandry, as to attract

attract the attention of every lover of agriculture. The professed design of this letter is to deter gentlemen, or others, from engaging *largely* in the *new husbandry*, on account of any success which may be proved ever so clearly to have attended it in small spots. This writer gives an account of Mr. Tull's birth, education, travels, retirement, application to, and various disappointments in, the new husbandry; which seems *candid*; and then adds, "But to conclude; if with all his labour, knowledge, and expence, Mr. Tull, the great father of the new husbandry, could never so far succeed in his own practice, as to make it the *general culture of his farm*, how little reason is there to expect that future adventurers will be more happy in their endeavours to facilitate its progress!"

To introduce this conclusion, (which is strongly expressed) the writer, who signs himself D. K. of *Hungerford*, has confidently asserted, in the immediately preceding page, that Mr. Tull, and Lord Ducie Morston, his laborious associate, "were both forced at last, after a world of money expended to very little effect, to *relinquish the project*, and to content themselves with farming their lands in the *ordinary way*, except some *small portions of it* [he means *them*] which they reserved for further experiments."

I must own, there was such a manliness of style, such a clearness of method, such conciseness of narrative, and, above all, such an appearance of *disinterestedness* and *benevolence*, in this writer, that I had scarce a doubt that the fact of Mr. Tull's and Lord Ducie Morston's giving up the new husbandry, except in small spots, was unquestionable; and the consequence, *viz.* that a *prudent* man could never think of pursuing this method, otherwise than by way of amusement, seemed undeniable; so that all hopes of introducing the new husbandry, as a national benefit, appeared to be at an end.

In this view of things, I did not expect to see any answer to the letter of D. K. and therefore was very agree-

ably surprised to meet with a *very full* and *satisfactory* one in the Gentleman's Magazine for *December*; an answer signed H. M. which I call *full* and *satisfactory*, because it confutes the assertion of *D. Y.* by express quotations from Mr. *Tull's* own works; the truth of these quotations not being reasonably disputable.

The substance of these quotations is, that Mr. *Tull* declares *solemnly*, that he is so far from having *well* nigh spent two estates by the *new husbandry*, that he was *at last* in better circumstances than when he set out in the world, notwithstanding many *uncommon* and *inevitable* misfortunes, of divers kinds; such as the necessity of *giving up his profession*, and *travelling* to save his life; that, of the only two farms he has occupied, he, in nine years, so much improved one, as to let it for above one third more rent than it had ever reached before, which it has continued at for almost thirty years, and is likely to encrease; and that the whole value of the purchase of the other farm would have been lost in the *common husbandry*, so that he owes the property of it to the new culture; a fact which, *however improbable* to ordinary readers, he promises to evince to any gentleman, who is curious enough to enquire of him concerning it. He also asserts, that he has not had an acre of *sown* wheat for nine or ten years, but, on the contrary, had, at his writing, one hundred acres of *drilled* wheat where the tenant used to have only twenty-five or thirty; and two years afterwards he asserts, that he shall have one hundred and twenty acres of drilled wheat every year; and two years *only* before his death, that he has the same hundred and twenty acres in wheat as heretofore, and *strong* and *hopeful*.

Can I, gentlemen, in justice to you and the public, conclude this letter without a few reflections on this subject, which naturally offer themselves to an honest and attentive mind?

What must one think of the authors of these several confident assertions above mentioned, to discredit the *new husbandry*? One would think that no man could have an interest

interest to discredit a *practice* which, at least, has a chance to be of benefit to *individuals* and the public. One would think, that if a man is satisfied in his own mind, that such a practice is not likely to be beneficial, either to *individuals* or the *public*, he might either leave it unopposed; or, if he thinks it his duty to oppose *errors* which may be detrimental to *individuals* or the *public*, he should, at least, take care to oppose *errors* only by the *weapons* of truth.

II. *H. M.* is candid enough to suppose that *D. T.* did not designedly misrepresent truth in his assertions, but only was misinformed. If we suppose this, (which I am willing to suppose) as the writer's talents appear considerable, and his interest seems not concerned in the opposition to the introduction of the *new husbandry*; yet what must we think or say of a writer who appears to have been so well acquainted with every thing else which related to Mr. *Tull*, and yet undertakes to oppose the introduction of his *new husbandry*, the great employment of Mr. *Tull's* life, and the subject of his letter, (or essay, as he calls it) without having ever seen the supplement and additions to Mr. *Tull's* Essay on the *Horse-hoeing Husbandry*, as *H. M.* candidly supposes! What must one think of such *inattention*, especially in a writer of spirit, who so liberally bestows the names of *superficial* and *backney* writers on those who do not fall in exactly with his sentiments!

III. Have we not, in the instances of the groundless assertions above mentioned, the strongest proofs how far many men, whose interests seem not concerned, will go to create prejudices against any *opinions* or *practices* which they happen to dislike? To *conceal*, or to *disguise*, or to *pass over* truth, which might be come at in enquiries of importance, imply almost equal degrees of guilt; and men's *passions* and *affections* have almost as much force in effecting such concealment, disguise, or passing over of truth, as their real interests. How cautious, even on speculative points, should we be, that we do not place our *affections* so, on either side, as not to attend to what can be advanced on the other!

IV. The

IV. The opposition which has been made to the giving a fair trial to the *mowing of wheat*, may be justly compared to the opposition which has appeared to the giving a fair trial to the *new husbandry*. I have had a large share of opposition, because I was desirous that a practice, which seemed likely to be of public advantage, should be *fairly tried*. Though I had impartiality enough to own that it might be attended with some disadvantages in some cases, yet I thought that its *advantages* were likely greatly to over-balance its disadvantages; and that these latter might be *greatly lessened*, if not *totally removed*.

I am, GENTLEMEN,

Your candid correspondent, &c.

East-Newton,

THO. CORNER, jun.

January 15, 1765.

N. B. I have received some information about the *mixed oat*, which I will at my leisure communicate.

P. S. I need not tell you, that I much approve of the plan proposed by your sensible correspondent C. B. for communicating, through the channel of your *Museum*, the various methods of husbandry in the several counties of this kingdom, as I have myself done something of that kind, and have more to communicate. I must also observe, that, as the Dictionary you propose, of *Terms of Art in Husbandry*, will be a very useful work, if properly executed; so, in order to execute it properly, it should not be done in an hurry; and yet, in the mean time, a footnote to explain, at the bottom of every page, words little or not at all known beyond narrow limits, would be a very useful addition to your work. Several such words, which want explanation, occur in your Third Volume. *Crowe*, page 326. *Ribbling and Barks*, page 318. *Welt*, page 333. *Packing*, page 338. *Rowing*, page 321. *Shack*, page 322. &c.

In my *Postscript*, Vol. III. p. 355. l. 9. correct the omission of *not* before *exact*; and dele *and* before *all*, in l. 15.

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NUMBER LXXXIV.

An Account of the Saving on the Wolds by the Mowing of Wheat.

GENTLEMEN,

THIS account was given to me by a *considerable* farmer and grower of wheat at *Baynton*, (a tenant to Sir *George Strickland*, Bart.) who came hither on justice-business.

I asked this sensible farmer, whether he, and his neighbours, did not usually expect that his mowers of wheat should, one with another, mow two acres each in a day? He smiled, and said, that they gave so great wages, and kept their labourers so well with both meat and drink, that they were obliged to make them work large days works; that they usually made a *fan*, or some trusty stout servant, a leader, and, in consequence hereof, they mowed each *nearly* three acres in a day.

I knew the usual wages; but I asked, and was confirmed in my former opinion, *viz.* that they usually give ten shillings by the week, with meat, drink, washing, and lodging, to stout men; and six shillings, with the like accommodations, to the women. He added, that usually a woman gathers after each mower, and a binder follows two gatherers.

On a gross calculation, I concluded that an acre would, after these proportions, be cut, gathered, and bound after the mower, for one fourth of the expence that an acre would be cut, gathered, and bound after the sickle.

But we will now be more accurate. The usual allowance of hands to reap an acre of wheat by the sickle in this country is, three women, and one man, to bind: if then the crops of wheat on the wolds be generally as good as in this lower country of ours, (and I believe they are pretty nearly so) the expences of the present method of mowing

mowing of wheat upon the wolds, and the adoption of our method of sickling, would be as follow.

Four men to mow, two men to bind, and four women to gather, would cut, gather, and bind, nearly twelve acres: but twelve men to bind, and thirty-six women to reap, would be necessary to cut, gather, and bind, twelve acres: that is, a difference of thirty-two women and six men. A man's day-wages are one shilling and eight-pence; a woman's, one shilling: suppose the man's meat and drink eight-pence; the woman's, six-pence—the wages, meat, drink, &c. of the labourers, on the mowing scheme, amount just to one pound; and the wages, &c. on the sickling scheme, amount to four pounds and three shillings: the saving then on these grounds is above three fourths: but as this calculation goes on the supposition that each mower dispatches three acres, and, according to my informant's account, each mows only nearly three acres, we must not conclude that the saving exceeds three fourths, but that it comes nearly to that amount.

However, I am very willing to suppose the saving expences, on an average, to be only *half* instead of *three fourths*. What an inducement to mow is here! Nay, even if we should suppose it only *one third*, what an encouragement to adopt this method!

Hitherto I have only considered the saving of *expence in money*: but let us reflect a moment on the saving in that valuable expence of time! If six men and four women in mowing can do the work of twelve men and thirty-six women in sickling, the twelve men, and eight of the latter company, will do twice the work of all the latter company, if properly instructed in mowing; so that we may have twice the number of acres cut in one day, and twenty-eight women to be employed in other work. What a prodigious saving, gentlemen, *in point of time*; and of what vast advantage, especially in a catching season, to the public!

Though it is not immediately to the purpose of this letter, yet, as it is to the purpose of the main subject of
mowing

mowing of wheat, I must add, that the farmer, from whom I received the account on which I build in this letter, assures me, that the wolds people find little or no inconvenience arising from the letting their corn stand in the field. They till the land so thoroughly, and weed it when in the blade so carefully, that they have *few* or *no* weeds, and therefore can house their mown corn as early as they could house sickled corn.

I am, GENTLEMEN,

Your impartial correspondent,

East-Newton,

THO. COMBER, jun.

February 13, 1765.

NUMBER LXXXV.

*A Letter from the Rev. Mr. Comber to Mr. Schoolcroft,
on transplanting Lucerne.*

DEAR SIR,

I AM much obliged to you for the present of fine lucerne-plants, which you were so good as to send me. You will be curious to know how they succeed; though it is impossible to say with any certainty, till spring is further advanced, what the success will be. However, I must own, I apprehend it will be very bad; and yet I am much pleased with the experiment, and hope to repeat it with far better success, as I now know, I think, to avoid the errors which seem to have ruined my present attempt.

In the middle of the last summer, I read with attention the accounts given by Mons. de Chateauxvieux of transplanting lucerne, as they are retailed by Mr. Mills in his *New and Complete System of Practical Husbandry*, and thought the method so rational, that I wished to have an opportunity of trying it; but as the season was too late for sowing a nursery, and I knew not where to get plants, I gave over all thoughts of it for that year, till I accidentally recol-

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lected, that in a late visit to Newton you told me you had sown some in drills; whereupon I concluded, you probably had some plants which you could spare, and I resolved to beg a few of you, to make a little experiment withal.

It was the very latter end of *October* when I thought of this application to you; and before I got the plants, and could have leisure to put them into the ground, a full week in *November* was gone: yet, as the frosts did not set in early the last year, and I had the precaution to set my plants in water till they were transplanted, and the soil was mellow, I resolved to try the experiment, and not without hope of success.

I think you had cut the roots to a proper length, about six inches, and the tops were cut within an inch or two of the crown.

I remembered that *Monf. de Chateauvieux* informs us, that the end of *October* is the latest season for transplanting in autumn with hope of success, on account of the frosts, which must be very dangerous to all plants which have newly changed their situation; and I was aware that the end of *October* must be a much more dangerous season in *England* than in the country where the original experiments were made.

I therefore laid over my bed of transplanted lucerne some long litter, and old hay, to preserve the plants from the frost: however, from the inspection I have sometimes made in a fine day, I am apprehensive that this coat has not been a sufficient defence, though we had little frost for a considerable time after I made my plantation.

I ascribe the mischief done to my plants, by the frosts, to the first frost, which came soon after they were set, and before they had made any new shoots from the main roots, and adapted themselves to the new earth.

My plantation has suffered, Sir, more from another enemy than the frost immediately, *viz.* a mole. This animal, finding the earth better loosened in my bed of lucerne

lucerne than elsewhere, wrought her mines in it *liberally*, and threw up many of the plants so far at least, that their roots, being exposed to the frost and rain, must have perished. I put down again such as I discovered thus thrown up; but I apprehend they had received their death-stroke before.

I am now sorry that I counted not the plants, which might easily have been done, as they came in a small basket; and I should then have known what proportion the *deceased* bore to the *survivors*.

I was soon apprehensive, that I had acted imprudently in following too literally the directions of *Monf. de Chateauvieux*, in placing the plants at the distance of six inches in the row from each other, and the rows at the distance of one foot from each other. This, I thought, must be far too near in good ground, as mine is; and I resolved to plant out my surviving plants in spring to twice the distance, both as to planting in the same row, and rows from each other: and I shall pursue this method with the survivors. I have lately seen, Sir, in the *Museum Rusticum*, an extract concerning the transplanting of lucerne, from a volume, which seems an excellent one: its title is, "Essays on Husbandry."

The author of that work is well convinced, as I have been, that the *fullness* and nearness of the rows as directed by foreigners, and which we followed, is far too great. He says, that after frequent experiments, it appears best to make the rows three feet four inches distant from each other, and to place the plants at the distance of a foot from each other.

It may not be amiss to make slight experiments, to see how plants answer at different distances in different soils; but, if I made any considerable plantation, I should chuse to follow a rule which this sensible writer assures us is deduced from frequent experiments.

The author of these Essays informs us, that he made his plantation in the beginning of *September*; a much more favourable season in our climate than October, as the

heats are then over, and the frosts at a greater distance. But the gentleman who has sent this extract to the editors of the *Museum Rusticum*, thinks this season at least three weeks too late for *England*; and perhaps he may be right, if the plants have been sown early enough to have gained sufficient strength, and the weather be moist, and the sun not more scorching than usual. The author of the *Essays* assures us, that his plants, sown in the end of *March*, were some of them eighteen inches high in the middle of *August*.

I wish you would send me word when your plants were sown, and what size they had at a like age, and what was your soil, and how thick you sowed your seed.

M. de Chateauneux advises, if the transplantation cannot be made before the end of *October*, to defer it to *Candlemas*. But I must remark, Sir, that for the same reason which shews *October* to be too late for our climate, viz. that the frosts set in soon after, *Candlemas* is too soon, as the frosts are not then gone off.

I cannot, Sir, approve the use of the dibble in transplanting of lucerne, if the soil is at all clammy; for this instrument presses the earth at the sides of the holes close, and the earth thrown into the holes seldom fills up all the holes; and then the rain, washing away the little earth next the roots, fills the vacancies: and if frost succeeds before the water is sunk into the adjacent earth, the ice destroys the roots. This I found to be the case in my transplanting this last season.

If the earth is very light, sandy, and dry, the dibble may do no harm, and the filling the holes with water before the roots are set, may be a prudent method, as the essayist advises.

The gentleman who sends the extract on transplanting of lucerne to the *Museum Rusticum*, says, "I greatly fear that the expences in this method will, when applied to any considerable extent of land, greatly exceed the worth of the crop." This is, Sir, a very surprising declaration. From the calculations of the essayist it appears,

pears, that the worth of the crop, in small extents of land, greatly exceeds the expences; and reason dictates, that the same should hold good of more considerable extents. If the extractor grounds his fear on any calculations, he should have given them to the public, that these, if able to stand the test, may prevent loss in considerable experiments; and, if not able, an useful improvement may not be discouraged.

The essayist would do an obliging service, if he would give an exact description of the *wild lucerne*, which, he says, was found near that place where he cultivated his lucerne. A note at the bottom of the page tells us, that this is *medica palustris*, which seems very oddly translated, *meadow lucerne* instead of *marsh lucerne*. The opinion of several writers on husbandry, that the *red honey-suckle perennial clover* is wild degenerated lucerne, seems very ill grounded, as that note observes; though a reason, which might well have been added, is not, *viz.* that the flower scarce bears any resemblance to that of lucerne.

As it seems universally agreed that water decays lucerne, I took, Sir, one of your plants, when I finished my setting, and put it into a bottle, filled with common water; and, to prevent frost, placed it in a room with a constant fire. From the seventh of *December* to the first of *January*, it made surprising shoots, about seven inches long, and turgid with new ones; but then, wanting nourishment, the shoots began to decline, and gradually died away; and the stalk seems now to retain little or no life.

I am, DEAR SIR,

Your obliged servant,

February 23,
1765.

THO. COMBER, junr.

NUM.

NUMBER LXXXVI.

Answer to the last Letter.

S I R,

I Am extremely obliged to you for your kind communication of your curious remarks and experiments of lucerne plants. Ours were sown, I believe, not before the latter end of April, or beginning of May: I did not measure them in mid-August, but believe they were about the height you mention. The soil was a clammy brown sand. They were sown much too thick, yet grew extremely well; but were so neglected for want of hoeing, that the grass has hurt them much.

If you would make another experiment of transplanting some this spring, I will send you as many as you please. I think Mons. Chateauvieux advises much too soon.

I am, with the greatest respect, SIR,

Your most obedient,

And much obliged,

Hovingham,

Humble servant, (in haste)

Feb. 24, 1765.

WM. SCHOOLCROFT.

NUMBER LXXXVII.

A Method of making Horses lie down in the Stable; to which is added a Query respecting the Cure of the Grease in Horses.

GENTLEMEN,

AS I have formerly communicated to you some articles which you thought not undeserving of notice, I hope what follows will be acceptable to your readers.

Whoever has any concern with horses, must know that it is sometimes very difficult to make them lie down in the stable; for some of them will stand night and day for several weeks, till their legs swell, and many disorders come on them, which are not easily got rid of.

This

This has frequently happened to myself; and I have been more than once in danger of losing a good horse, by the consequences which have naturally ensued. Many methods have I tried for curing this disorder, if I may be permitted so to call it, but still without success.

I, some years ago, when I lived in Essex, applied to several horse-dealers and grooms; but they could none of them inform me of any remedy.

Chance at length, however, gave me that knowledge, which I had been long in vain endeavouring to acquire; for dining, about a month ago, at the house of a friend, there happened to be a gentleman in company who had lately been buying some horses of a noted dealer.

As the conversation turned on horses, this gentleman, whose veracity I have the greatest reason to depend on, observed, that when he was about buying his horses, he asked the dealer whether they lay down in the stable without trouble; to which he answered, that they did; but added, that it was a matter of no consequence, as, if they did not, they might, by a simple method, be made to do it. "When, says he, you have a mind to make a horse lie down in the stable, take a piece of strong pack-thread, or lay-cord, and tie it as tight round the horse's tail as possible, without breaking the skin, and as near as you can to the rump-bone: this, adds he, will give him a pain in the back, and he will be glad to change his posture to get ease; and when he finds he cannot in any other way procure it, he will lie down, which he will find the most easy posture; and he will, of course, take a liking to it."

I was so much pleased with the simplicity of this method, that I immediately thought of communicating it to you for the benefit of your readers, who, if they entertain the least doubt of it, may easily try whether it answers in practice, without trouble, and, what is still better, without either hazard or expence.

I am, I acknowledge, very fond of that noble, generous, and useful animal, the horse, and am, for that reason, very sorry that so few remedies for the disorders incident

to

to him should have hitherto been inserted in your entertaining and instructive collection.

I should take it as a very particular favour if some of your correspondents would inform me, and many other readers, who, I dare say, would be glad to know, what is the best remedy for a horse that has the grease: some, to whom I have applied, say it is a disorder in the blood, and requires internal medicines; to which opinion I incline: on the contrary, others assert it can be cured by external applications; but then they are at a loss to tell of what particular nature those applications should be.

Proper and moderate exercise is, I know, of great use to a horse that has swelled heels; but this cannot be called a remedy: it removes, indeed, partially, for a time, the effects; but the cause still subsists, as is evident from the return of the swelling when the exercise is abated.

My wish is, to eradicate the cause of the disorder, whatever it may be; and, I own, I think it a proper subject for a very useful letter from some person who may be enabled, by experience, to gratify me and others in this matter.

It often astonishes me, that amongst the many laudable premiums offered by the Society, of which we are members, there should be none for the discovery of remedies for the several disorders to which all kinds of cattle are subject: nothing could be more useful, nothing could be more easily ascertained, than their efficacy; for, if the remedies did not stand the test of experiment, and cure a certain fixed proportion of any given number of horses to which they were administered, they should be rejected. I can safely aver, that if any remedy could be found out, which would cure fifteen horses out of twenty afflicted with any particular disorder, it would be of infinite use; for the farriers, or horse-doctors, as they are sometimes called, are, generally, not only very ignorant, but very imposing.

I am, GENTLEMEN,

Your most humble servant,

London,

A MEMBER OF THE SOCIETY OF ARTS.

May 2, 1765.

NUM-

NUMBER LXXXVIII.

Queries respecting the Laying-down of a common Field, impoverished by bad Husbandry; with some Reflections on the high Price of Corn, and the Means of remedying it.

GENTLEMEN,

THOUGH you have done me the honour of inviting me to a further correspondence, yet I confess you would not have heard from me again so soon, if a fresh object had not presented itself to view, which, when I wrote last, I neither expected, nor could foresee.

A common field, upon a division, is fallen into my hands, which has been ploughed longer than the oldest man can remember, and which, by the idle course of husbandry followed in this neighbourhood, is very much run out or impoverished. As it lies extremely convenient for my summer-pasture, and has a never-failing beck, or rivulet, running at the bottom of it, I am determined to convert it to that use, but am a little dubious whether I should plough it up before winter, or not till the spring. The most intelligent here advise me, some one way, and some the other.

I incline myself to plough it, as soon as the hard corn, (wheat) with which it is now sown, is got in, to let it lie rough in narrow ridges during winter, and keep the furrows as open as possible, to let the water drain off. I am not, however, so far determined to follow this method, as not to be glad to change it, if any one, experimentally, will point out to me a better; but in this case it will be necessary to have directions in your next *August Museum**, at the farthest, which will reach me about the middle of September.

VOL. IV. No. 21.

3 B

The

* We should be particularly obliged to any practical correspondent who would comply with this gentleman's request; perhaps Mago, or E. S. would confer on us this favour. E.

The field lies upon an easy decline, to the east on one side, and to the north on the other. This, gentlemen, is one reason for my converting it solely to a summer pasture, its situation making it exceeding bleak and cold during six or eight months in the year. It is a stoney, cold, wettest earth, within about a foot of a craggy lime-stone, and seems to have a mixture of clay; produces clean good wheat as any in the neighbourhood, but not above half the crop that might be expected from the like quantity of land.

Though wet, I make no scruple to say I can lay it dry enough, by a method which I have the pleasure to see I have, in some small measure, introduced into this neighbourhood.

At my first coming hither, I found some of the closes, which fell into my possession, extremely wet, and without remedy, said my neighbours. As the ground was nearly level, I was obliged to dig a large drain in the lowest part I could find, and to make several lesser to empty themselves into it, and left them all open, to see the effect. It answered, in short, my expectation; but as the sides were continually crumbling in, and it became extremely dangerous for cattle to pass from one part of the field to another, I began to consider if it were not practicable to fill them up.

In this I was told it was impossible to succeed, because a very sensible farmer, some years before, had tried the experiment, and failed. Upon enquiry, I found he had filled up his drains with brush-wood, and such like perishable stuff; but as I intended to proceed in another manner, I was not at all discouraged by his ill success.

In my field above, which was newly laid down with grass-seeds, there was such a quantity of stones, as made it impossible to put in the scythe without gathering them off. With these then I should have been much distressed, if I had not had these drains to lead them into. I therefore filled them up with the stones I gathered off, and do assure you, from a dozen years experience, they have answered to admiration. I have not yet covered the stones with

with any thing, but think a sod, wrong side up, might be laid very safely upon them, and shall try, if I have occasion to make any new drains.

The earth dug out, when exposed a sufficient time to the air, and properly mixed with lime, of which we have plenty, turned out to very good account.

I have strayed, I find, from my first purpose, but not uselessly, I hope, gentlemen, from your design. To return :

I proposed to plough my field into narrow ridges in October, to let it lie exposed to the frosts during winter; and, as soon as the weather in the spring will permit, to harrow it well, throw down the ridges, harrow and cross-plough it two or three times more in the summer, and against winter ridge it again; and then in the spring throw a convenient number of the ridges together, and sow it with oats and grass-seeds; or manage it in any other manner that any of your practical correspondents shall direct.

This direction, I hope, will be in plain and familiar terms, and not in the *cant*-terms of one or two particular counties. I just hint this, because I was plagued with one of your correspondents talking of old crones; for, if he had not afterwards mentioned selling the lambs and feeding the crones, I should not have understood his meaning to this hour. Another talks of so many coomb of wheat, by which we here no more understand his meaning, than if he had wrote to us in Hebrew.

It is pity, indeed, great pity, that the legislature does not order *one* and the same measure and weight for the whole nation, and, instead of disputing which is the best measure and weight, only say which *shall* be the *only* measure and weight through the kingdom.

I frequent at this time two or three markets; and a man must have frequented them some time before he can know even how to buy a pound of butter; for, when I am buying a pound in one market, I am actually buying a pound and half nearly in another; sixteen ounces passing in the

one, though twenty-three will scarce pass in the other. No wonder then that a letter from one end of the island, of the price of things, should be no more understood at the other than if it had come from Grand Cairo. What has been said of butter, may be said of the weight of wool, and measure of oats, &c.

Whilst I am talking of butter, give me leave to express my surprise at the uncommon pains taken to reduce the price of that commodity, when no steps, effectual steps I mean, are taken to reduce the price of corn, either by taking off the drawback, or putting a stop to its exportation, for a season.

The high price of corn, at present the crying grievance of the nation, requires the immediate consideration of those who have the power to reduce it; and I was told the other day, and told very feelingly, by a poor fellow who works for ten-pence a day, that it was far more necessary for him to have a loaf of bread than a pound of butter. However, if he can live by butter alone, he may now do it, as our pound (twenty-three ounces) has been bought the two or three last market-days under five-pence.

The season for sowing spring-corn has been extremely unfavourable, nor does the winter-corn here look very promising: is it not therefore highly necessary to make use of the temporary expedient of stopping the exportation for a while? I call this only a temporary expedient, because, whilst the humour prevails, and is suffered to prevail, of dividing common-fields, the growth of corn must proportionably decrease,

Whilst fields lie open, every man must follow nearly the same course of husbandry as his neighbour, or at least crop his ground in the same manner: all these fields are therefore indispensably a fund for corn, as no man is at liberty to turn his share, which, perhaps, lies in ten or a dozen different parts, into pasture. But let each man's share be once ascertained and enclosed, and there immediately rises a different scene to your view. This may, perhaps, be convenient or agreeable to individuals, but

must, in time, have very serious effects upon the public. The same argument may be applied for the enclosing of heaths and moors, because they, of course, must be converted to tillage, and of consequence the growth of corn be encreased.

I intended, before I closed my letter, to have desired an explanation, in some particulars, of your correspondent Y. who writes on the different value of grass and tillage; but find myself, in a very sensible manner, anticipated by Ruricola Glocestris: I shall therefore only add, that in Y.'s calculation there is not only all the hay sold that is grown, but, as it appears to me, some years a great deal more. I mention not this, gentlemen, for the sake of mere cavil or dispute; I would not so uselessly misapply either your time or mine. I think the public and myself much obliged to Y. for his laudable attempt, even though there were more inaccuracies than there seem to be; and make no doubt that, when you have an opportunity of hearing again from that very ingenious correspondent, we shall be well satisfied with his answer to the objections that now seem to lie against his scheme,

I cannot omit acknowledging myself much obliged by a note or two, on my former letter, signed E. which shall not fail being properly applied by*,

GENTLEMEN,

Your most obedient,

Askrigg, Yorkshire,

Humble servant,

April 26, 1765.

J. SCOTT.

P. S. I find, by dating my last from Newcastle, where I happened to be, I have inadvertently led you, gentlemen, into a mistake; into a mistake indeed not worth notice, if I had not occasionally mentioned weights and measures, which differ there from what they are with us.

* The editor who signs E. would esteem himself peculiarly happy, could he, in any respect, contribute to Mr. Scott's satisfaction or advantage.

NUM.

NUMBER LXXXIX.

On the Culture of Coleseed by Transplantation, with a Ward or two in Defence of the Under Stratum of Earth.

GENTLEMEN,

I Have lately read, with the most pleasing satisfaction, a piece written by the justly-celebrated Marquis de Turbilli, on the culture of coleseed, as practised by the Flemish farmers.

We all know that the Flemish farmers were our masters in the art of husbandry, as they had brought agriculture to a considerable degree of perfection before we, on this side the water, had scarcely made any progress in it; and when we did begin to improve our land, by laying aside our slovenly method of farming, we were indebted to them for many admirable instructions.

The Marquis de Turbilli is the Tull of France, and has been of more real service to the state of agriculture in that kingdom, than all the practical writers that ever preceded him.

The piece above mentioned is published in the Third Number of the Foreign Essays on Agriculture and Arts; and, indeed, I could wish it had been consistent with your plan to have inserted it entire in your collection; but as this would probably be asking too great a favour, I request you will give place to the following short abstract of this valuable essay.

The marquis observes, that all sorts of coleseed are cultivated in the same manner; and that all grow more or less towards their natural perfection, yield more or less seed, and this seed is of a better or worse quality, according to the nature of the soil on which the coleseed is sown, the good or bad husbandry bestowed on it, the favourableness of the season, and the manner in which it escapes other accidents to which it is subject.

Coleseed,

Coleseed, he says, thrives best in deep kindly soils; but with plenty of manure, and deep ploughing, it will grow any where. He adds, that he has seen it yield good crops on a dry chalky soil, on which street-dirt had been laid.

I must observe, that this is a very useful piece of knowledge to propagate, as I never yet heard of any farmer in England who ventured to sow it on such a soil. This should be attended to by the Bedfordshire farmers about Dunstable, &c.

Our noble husbandman next remarks, that in Flanders coleseed is sown and transplanted like cabbages: they give two ploughings to the land before winter; and it is not of much consequence what crop the land was last under.

In the month of May another deep ploughing is given; the land is harrowed two or three times, and then rolled, in order to make it fine. Towards the eighteenth or twenty-fourth of July, it is again ploughed, harrowed, and rolled till it is reduced to as fine a tilth as possible: the seed is then sown, being scattered by the three fingers; the land is lightly harrowed, and afterwards rolled.

The marquis says, that twenty-four pounds of seed will sow three acres, and the plants on these three acres will fill twelve others. Coleseed is transplanted after any crop whatever.

The land intended to receive the coleseed-plants should be twice ploughed as soon as the crop is carried off. About ten or fifteen days afterwards it is to be once or twice harrowed, and towards the end of September it should have a very deep ploughing. In this last ploughing there should be an open furrow or trench every five bouts. If the field does not lie level, it should be ploughed obliquely, so that there may be an easy fall for the water.

The best and most promising plants being taken up, and tied in bunches, are carried to the field where they are to be transplanted, by the time the last ploughing is completed, and the workmen are ready for them.

There

There will always remain a number of plants in the land where they were sown: these are generally fed off with cattle; for the farmers never let them stand to ripen their seeds, unless they intend to manure the land for the succeeding crop.

The season in Flanders for transplanting coleseed is the beginning of October. The plants are placed in rows across the furrows. The rows are one foot asunder, and the plants in the rows about six inches distance one from the other. The manner in which this work is done is as follows. A certain number of men advance in a parallel line, each having a dibble, or spade-handle, with two large iron points to it, six inches asunder: they drive this instrument into the ground; the women and children follow, who put a plant into every hole, and settle it with their heel, in this manner working with feet and hands at the same time; which it is easy enough to do, and it saves some expence.

When all the coleseed is transplanted, if the land to which it was removed was not dunged before it was ploughed, it must be sown with pigeon's dung reduced to powder: this, of all other manures whatever, has the most immediate and proper effect on the vegetation of this plant; sixty bushels are enough for two acres.

When this is done, the loose earth in the trenches, or open furrows, is to be thrown with a shovel amongst the plants in the rows. Early in the spring, a spit of earth out of the trenches is, in like manner, to be cast amongst the plants of coleseed in the rows. This slight tillage gives vigour to the crop, choaks the weeds, and keeps the soil loose.

The rows of coleseed form a number of beds, and when it thrives well, the trenches are entirely covered, and the whole resembles a thick copse.

Here the marquis observes that coleseed thrives perfectly well in new-enclosed lands.

The seed is fit to gather about the beginning of July. When it turns yellow, it is reaped like corn, and laid in pretty

pretty large gavels on the beds, where it remains three or four days; it is then carried in cloths, in order to prevent any of the seed from being lost, for it is very ready to drop.

In one, or several parts of the field, in proportion to its extent, and to the quantity of coleseed there is, the crop is formed into several stacks. The Flemish farmers never thatch these stacks; they know so well how to make them, that the rain does them no damage. The coleseed heats in the mow, by that means yielding more oil than it would have done if it had not been stacked.

In the month of September, they make a kind of floor in the field, whereon they thresh and dress their coleseed. If a farmer should incline to thresh his coleseed without stacking, it will be necessary for him to leave the gavels longer exposed to the air on the beds. Coleseed may be cut at any time of the day, provided it does not shed; if it does, it should only be cut morning and evening. As a whole field does not all ripen at the same time, it should be cut in different portions; being laid in gavels, or heaps, the changes of weather will not affect it. It may safely be stacked three or four hours after rain, provided it has previously been some time in gavels, and is judged sufficiently dry.

In order to clean the seed, parchment sieves are used, if there is any wind stirring; but if it is calm, they use wind-fans.

Coleseed should not be sown on the same land above once in five or six years.

In the neighbourhood of Clermont, in Beauvoisis, the marquis tells us, that they let the coleseed ripen in the field where it was first sown; but if they considered that coleseed is not fond of moisture, that it sends forth large roots into the earth, and grows to a great height, with numerous, wide-extended branches, they would be sensible that the land, being covered with too many plants, must be impoverished; and that plants, which stand so close together, cannot attain their full size: thus, in this way, the land is impoverished, the weeds are left to perfect

and shed their seeds in it; and not only the crop of coleseed is very indifferent, but also the crops which succeed it. In order to restore such land to a good condition, it should be well manured and fallowed.

Coleseed extracts such a quantity of salts from the earth, that the Flemish farmers transplant it, as well to divide betwixt two pieces of land the losses in point of quality it occasions to the soil, as to procure better crops. For both these reasons, they also sometimes transplant their coleseed on land newly broke up.

In the country of Amiens they transplant their coleseed after the plough in close furrows: this method is better than that above mentioned; but it is greatly inferior to the Flemish method; for the rows are disordered, and the plants crushed, by the horses feet; and having, besides, no fresh earth laid on them, they cannot grow to be such fine plants; and, on the other hand, the earth, which is not kept stirring, cannot receive any considerable benefit from the influences of the air.

The marquis observes, that there is, however, a case in which this method must be resorted to, which is, when the plants are grown so tall, and have such long roots, that proper holes cannot well be made for them with a dibble, they should be laid in the furrows after the plough, and open furrows, or trenches, should be left at the distances already mentioned; but the earth from these trenches is with greater difficulty thrown on the beds, because the coleseed, in this method, is planted lengthways, whereas, in the other method of transplanting, the plants cross the beds.

I have observed, gentlemen, in several parts of your work, that Mr. Rocque mentions, that the earth under the surface is dead, sour, and poisonous; and, if I remember right, he adds, that the quantity of a bushel of this earth, spread over a rod of land, would deprive it of its fertility.

For my part, I cannot say I know of any earth, unless it is such as may be strongly impregnated with mineral juices, but what will afford nourishment to plants, after
having

having been exposed a due time to the influences of the air. I have several times caused what has been called dead and barren earth to be spread on the surface of land, and after having been laid on some time, instead of diminishing its vegetative quality, it rather added, and sometimes considerably, to its fertility.

An experiment in this matter is very easily made, therefore I would by no means have your readers implicitly depend on my assertion.

In the Essay, of which I send you the above abstract, the Marquis de Turbilli relates a very curious fact, which corroborates my assertion: permit me therefore, as the passage is short, to request you will insert it in his words, which follow.

“ In the year 1755, I saw, in the neighbourhood of Guise, (in France) some coleseed transplanted into a field, containing about eighteen acres, which had always borne fine corn, but had no great depth of soil.

At the depth of seven or eight inches from the surface lay a bed of red clay, which the farmers are so much afraid of mixing with their good earth. This land was first well dunged, and, when the coleseed was transplanted, the red earth out of the trenches was thrown on the beds.

All the inhabitants of the country flocked to see this work executed, which was under the direction of a Flemish farmer. They pretended that he spoiled the land, and that no corn would grow on it afterwards.

However, during the course of the winter, the red clay became mellow; the rains, which washed the dung, ran into the trenches, carrying with it a sediment and a portion of salts, improving the earth that was in the ensuing spring to be thrown on the beds amongst the rows of the coleseed, which came on amazingly.

At the harvesting of the next crop, the inhabitants did not fail coming to see what sort of corn succeeded the coleseed; and being perfectly well convinced that it was much finer than the land was accustomed to bear, they laid aside their prejudices, and adopted the planting of coleseed. In the year 1761, there were in that single

quarter, above one hundred acres of transplanted coleseed."

Must we not, gentlemen, on such good authority, allow, that the notion of the under-turf earth being poisonous is ideal? If indiscreetly laid over the surface of the land when it either is, or is to be soon, under certain crops, may be prejudicial, and so may the best practices in husbandry, if injudiciously followed.

I am, I acknowledge, on most occasions, an advocate for deep ploughing, as it will frequently, I can venture to affirm, double the value of a farm to the tenant.

How can Mr. Rocque reconcile his recommending trench-ploughing in the culture of lucerne and burnet with his notion of the under *stratum* of earth being poisonous?

One word more, and I have done for this time. The Flemish manner of cultivating coleseed seems perfectly judicious, as the marquis, in the argumentative part of his Essay, evidently makes appear. I beg leave to refer your more enlightened readers to the piece itself, with the perusal of which they will be abundantly pleased*.

I could wish to hear of this method of transplanting coleseed being adopted in England: perhaps your sensible, learned, and very public-spirited correspondent, the Rev. Mr. Comber, will undertake to introduce it in Yorkshire, where I understand they sow a considerable quantity of coleseed. It might tend to banish the absurd custom the Yorkshire farmers have of spending all the profit of the crop in entertaining a parcel of idlers at a rape-shearing.

I thought, perhaps, to apologize for the length of this letter; but, as the subject is important, it will, I hope, be excused.

I am, GENTLEMEN,

London,

Your very humble servant,

May 4, 1765.

CLERICUS.

* We must not omit observing, though our correspondent has passed it over, that the Marquis de Turbilli, in the essay above referred to, says, that the cakes from which the oil has been extracted, serve to bring up, feed, and fatten cattle of all kinds, oxen, cows, and sheep; that they are given to them crumbled, and mixed with bran; and that the cows which feed on them give plenty of milk.

NUMBER XC.

An Account of the Premiums offered this Year (1765) by the Society for the Encouragement of Arts, Manufactures, and Commerce.

FOR PLANTING AND HUSBANDRY.

1. ACORNS. **F**OR planting or sowing the greatest quantity of land with Acorns (twenty acres at least) between the twentieth of September, 1764, and the first of May, 1765, and for fencing and preserving the same effectually, in order to raise timber; a Gold Medal.

—Certificates of sowing, agreeable to the above conditions, (and that there are five hundred Oak Plants at least on each acre) must be delivered to the Society on or before the first Tuesday in November, 1765.

2. For the second greatest quantity of land sown with Acorns (not less than fifteen acres) agreeable to the above conditions; a Silver Medal.

3. For the third, (not less than ten acres) a Silver Medal.

4, 5, 6. The like premiums, and on the same conditions, will be given for planting or sowing Acorns between the twentieth of September, 1765, and the first of May, 1766.—Certificates to be delivered on or before the first Tuesday in November, 1766.

7. CHESNUTS. For sowing the greatest quantity of land with Spanish Chesnuts, (for raising timber) not less than six acres, before the first day of May, 1765, and for effectually fencing and preserving the same; a Gold Medal.

8. For the second greatest quantity, (not less than four acres) a Silver Medal.

9. For the third greatest quantity, (not less than two acres) a Silver Medal.—Certificates of having planted, agreeable to the above-mentioned articles, must be delivered to the Society, on or before the first Tuesday in November, 1765.

10, 11, 12 The

10, 11, 12. The like Premiums, and on the same conditions, will be given for sowing Spanish Chestnuts before the first of May, 1766.—Certificates of sowing, agreeable to the above conditions, (and that there are five hundred Spanish chestnut-plants at least on each acre) must be delivered to the Society, on or before the first Tuesday in November, 1766.

13. ELM. For properly planting the greatest number of the Small-leaved English Elm, for raising timber, (commonly used for keels of ships and water-works) not less than one thousand, before the first day of May, 1765, and for effectually fencing and preserving the same; a Gold Medal.

14. For the second greatest number, in like manner; a Silver Medal.

15. For the third, a Silver Medal.—Certificates of having planted, agreeable to the above-mentioned articles, must be delivered to the Society, on or before the first Tuesday in November, 1765.

16, 17, 18. The like premiums, and on the same conditions, will be given for properly planting the Small-leaved English Elm before the first of May, 1766.—Certificates to be delivered on or before the first Tuesday in November, 1766.

19. FIR. For planting out in the year 1765, at proper distances, the greatest number of that Pine, commonly called the Scotch Fir, (being the tree which produces the best red or yellow deal) not less than twenty thousand; to be two years old at least when planted out; and for effectually fencing and preserving the same; a Gold Medal.

20. For the second greatest number, (not less than ten thousand) in like manner; a Silver Medal.

21. For the third greatest number, (not less than ten thousand) a Silver Medal.—Certificates of such planting must be delivered on or before the last Tuesday in January, 1766.

N. B. Not less than one acre to be planted in any one inclosure, and they must be planted not nearer to each other than four feet.

22, 23, 24. The

22, 23, 24. The like premiums, and on the same conditions, will be given for planting out Scotch Fir in the year 1766.—Certificates to be delivered on or before the last Tuesday in January, 1767; and to be specified in the certificates, at what distances they have planted them.

25. WEYMOUTH PINE. For planting out in the year 1765, at proper distances, the greatest number of White Pine, commonly called Lord Weymouth's Pine, or the New-England Pine, (being the properest sort for masts) not less than two thousand, to be four years old at least when planted out, and for effectually fencing and preserving the same; a Gold Medal.

26. For the second greatest number, a Silver Medal.

27. For the third greatest number, a Silver Medal.—Certificates of such planting must be delivered on or before the last Tuesday in January, 1766.

28, 29, 30, 31, 32, 33. The like premiums will be given for planting out Lord Weymouth's Pine as above, in the year 1766, and also in the year 1767; and certificates thereof must be delivered on or before the last Tuesday in January, 1767, and for 1767, on or before the last Tuesday in January, 1768.

34. LUCERNE. For sowing or planting with Lucerne the greatest number of acres (ten at least) upon ground well cultivated, and for keeping the same free from weeds for three years; and giving an account of the culture, soil, annual produce, and its effects on cattle fed with it; Twenty Pounds.

35. For the next greatest number; Fifteen Pounds.

36. For the next, Ten Pounds.—The certificates to be produced on or before the second Wednesday in December, 1767.

37, 38, 39. For sowing or planting with Lucerne the greatest number of acres, (ten at least) upon ground well cultivated, and for keeping the same free from weeds; and giving an account of the culture, soil, annual produce, and its effects on cattle fed with it; Twenty Pounds.

For the next greatest number, (eight acres at least) Fifteen Pounds.

I

For

For the next, (six acres at least) Ten Pounds.—The certificates to be produced on or before the second Wednesday in December, 1768*.

40. CARROTS. For sowing the greatest number of acres (not less than ten) with Carrots, for the feeding of cattle only; giving an account of the soil, culture, time of taking up, produce, and their effects on cattle fed with them; Twenty Pounds.

41. For the next greatest number, (not less than eight) Fifteen Pounds.

42. For the next, (not less than six) Ten Pounds.—The certificates to be produced on or before the first Tuesday in November, 1766.

43. WHITE CLOVER-SEED. For the greatest quantity of White Clover-seed raised in England, in the year 1765 (not less than four hundred pounds weight); Twenty Pounds.

44. For the second greatest quantity, (not less than three hundred pounds weight) Fifteen Pounds.

45. For the third greatest quantity, (not less than two hundred pounds weight) Ten Pounds.—The certificates to be produced on or before the second Wednesday in March, 1766.

46. PARSNIPS. For sowing the greatest quantity of land (not less than ten acres) with Parsnips, for the feeding of cattle only; giving an account of the soil, culture, produce, and their effects on cattle fed with them; Twenty Pounds.

47. For the next greatest quantity of land (not less than eight acres) Fifteen Pounds.

48. For the third greatest quantity of land, (not less than six acres) Ten Pounds.—The certificates to be produced on or before the first Tuesday in November, 1766.

49. PARSLEY. For sowing the greatest quantity of land (not less than four acres) with Parsley, for the feeding of sheep only; giving an account of the soil, culture,

* The lucerne may be raised either in Mr. Rocque's method, as described in this work, in rows with intervals, or may be cultivated by transplantation, in claim of these premiums.

culture, produce, and its effects on the sheep fed with it ;
Twenty Pounds.

50. For the next greatest quantity of land, (not less than three acres) Fifteen Pounds.

51. For the third *ditto*, (not less than two acres) Ten Pounds.—The certificates to be produced on or before the last Wednesday in February, 1767.

52. BURNET. For the greatest quantity of land (not less than five acres) sown with Burnet; Twenty Pounds.

53. For the next greatest quantity of land, (not less than four acres) Fifteen Pounds.

54. For the third greatest quantity of land, (not less than three acres) ten pounds. — Certificates to be produced on or before the second Tuesday in January, 1766, for those that sow or plant Burnet the preceding year.

55. For sowing or planting with Burnet the greatest number of acres, (not less than ten) upon ground well cultivated, and for keeping the same free from weeds for two years; and giving an account of the culture, soil, annual produce, and its effects on cattle fed with it; Twenty Pounds.

56. For the next greatest number of acres, (not less than eight) Fifteen Pounds.

57. For the next greatest number of acres, (not less than six) Ten Pounds.—The certificates to be produced on or before the first Tuesday in December, 1768.

N. B. All persons intending to cultivate Burnet, may be supplied with the seed, and receive instructions for the culture of it, from Mr. Rocque, of Walham-Green, near Fulham.

58. GRASS SEEDS *gathered by hand*. For the greatest quantity (not less than one pound weight) of each of the following kinds of Grass-seeds gathered clean from the fields, by the hand, when ripe. *viz.*

Vernal,	} Five Pounds *.
Fine Bent,	
Meadow Foxtail,	
Sheep's Fescue,	
Crested Dog's-tail,	
Common Poa;	

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3 D

59. For

* See plate II. of this Volume.

59. For the second greatest quantity of each, Three Guineas.

60. For the third greatest quantity of each, One Guinea.
 —Certificates under the hands of the minister and church-wardens, or of two or more of the principal inhabitants of the parish, ascertaining the quantities gathered, together with a small sample of each kind of seed, certified as above to have been taken indifferently and unpicked out of the gross quantity gathered, with a few plants of each kind of grass, having the seed upon them as it grew; to be produced to the Society on or before the first of December, 1765.

Specimens of the grasses in seed are to be seen at the Society's room in the Strand; and drawings of them in Mr. Stillingfleet's Miscellaneous Tracts, and in Mr. Mills's Third Volume of Husbandry.

61. For the greatest quantities respectively of each of the above kinds of Grass-Seeds, gathered in like manner, in the year 1766, or produced, and clean saved from such seeds gathered in the year 1765, as shall be separately sown in drills, and kept clean from all mixtures of other grasses and weeds; Ten Pounds.—Certificates of such separate sowing in drills and weeding, together with such certificates and samples as are required for the year 1765, to be produced on or before the first of December, 1766.

62. For the second greatest quantity, Five Pounds.

63. For the greatest quantity of land, not less than one acre, which shall be sown with any one of the above-mentioned sorts of Grass-Seeds unmixed, in the year 1767, the Society will give a premium of Twenty Pounds for each quantity of land so sown; the sowing to be in drills for the convenience of keeping the grass from weeds.—Certificates signed as above, ascertaining the quantity of the land sown, the quality of the soil, that the seed was sown in drills, and clean hoed and weeded; to be produced to the Society on or before the first of December, 1767.

N. B. The Society will be ready to purchase such clean seeds of the above grasses as shall be brought to them between the first day of August and the first day of December

ber in the year 1767, at prices to be ascertained in their publications for that year, and will distribute the same *gratis* among such members of the Society as shall give in their names to the secretary between the first day of January and the first day of March in the year 1768.

64. The Society will give to any nobleman or gentleman for the greatest quantity (not less than two pounds weight) of any of the following Grass-Seeds gathered clean by hand when ripe, in the year 1765, *viz.* Meadow-Fescue, Yellow-Oat, and Annual Poa; and who in the year 1767 shall sow the greatest quantity of land (one acre at least) in drills with any of the above Grass-Seeds unmixed; a Gold Medal for each.

Certificates and certified samples, as required for the other grasses, to be produced to the Society on or before the first of December 1765, with a few plants of the grass having the seed on them as it grew.

Certificates signed as above, ascertaining the quantity of land sown, the quality of the soil, and that the seed was sown in drills, hoed and kept clear of weeds; the value of each grass to be compared with natural pastures on the like soils and situations with regard to quantity and quality; to be produced to the Society on or before the first of December, 1767.

65. CULTURE OF WHEAT. It not being yet ascertained by sufficient trials, whether sowing in broadcast or in drills, horse-hoeing the intervals, be the most proper method of cultivating Wheat, the Society will give to the person who shall produce an account of the most profitable method of cultivating it, confirmed by experiments, in which a comparison must be made between the two methods, and an account must be given of the soils in which each method promises the best success; a Gold Medal.

66. RYE. The like premium will be given for an account of the most profitable method of cultivating Rye as above.

67. OATS. Also for Oats as above, the like premium.

68. **BARLEY.** And likewise for Barley as above, the like premium.—The candidates must deliver in their accounts on or before the first Tuesday in December, 1765.

69, 70, 71, 72, 73, 74, 75, 76, 77. **LUCERNE, SAINTFOIN, CARROTS, &c.** The like premiums will be given, and on the same conditions, to the persons who shall produce the best accounts of the most profitable method of cultivating each of the following articles, viz. Lucerne, Saintfoin, Carrots, Parsnips, Parsley, Turneps, Beans, Peas, and Tares or Vetches.

N. B. The Society expects that the places shall be specified where such experiments were made, and that the experiment in the broad-cast, and in the horse-hoeing method, be made on the same kind of soil, and as contiguous as may be.

The premiums for the above-mentioned articles are extended to Scotland and Ireland, and also to the British Colonies on the continent of North-America.

78. It not being yet ascertained by sufficient trials, whether sowing in broad-cast or in drills, horse-hoeing the intervals, be the most proper method of cultivating Wheat, the Society will give to the person who shall produce the most accurate account of experiments, with the success in each method, and a description of the soil in which each experiment has been made, a Gold Medal.

79, 80, 81, 82, 83, 84, 85, 86, 87, 88, 89, 90. The like premium will be given for the like account of experiments on each of the following articles, respectively, viz. Rye, Oats, Barley, Lucerne, Saintfoin, Carrots, Parsnips, Parsley, Turneps, Beans, Peas, and Tares or Vetches.—The candidates must deliver in their accounts on or before the first Tuesday in December, 1767.

N. B. The Society expects that the places shall be specified where such experiments were made; and that the experiment in the broad-cast, and in the horse-hoeing method, be in the same kind of soil, and as contiguous as may be.

The

The premiums for the above-mentioned articles are extended to Scotland and Ireland, and also to the British Colonies on the continent of North-America.

91. JUNIPER BERRIES. For sowing with Juniper Berries the greatest quantity of land in England or Wales, (not less than six acres) before the first day of November, 1764, the same being properly fenced and secured; the sum of Forty Pounds.

92. For the second greatest quantity of land so sown, fenced and secured, (not less than four acres) the sum of Thirty Pounds.

93. For the third greatest quantity of land so sown, fenced and secured, (not less than two acres) the sum of Fifteen Pounds.—Certificates under the hands of the minister and church-wardens of the parish, or of two or more of the principal inhabitants in the neighbourhood; that such land was so sown, and fenced or secured, as also that the Juniper Plants raised from such seed are actually growing, and in a thriving state at the time of the making such certificate, must be sent to the Society on or before the second Wednesday in November, 1765.

N. B. It is expected that the berries be sown in drills, each drill at the distance of four feet from each other.

94. MADDER. The Society do hereby certify, that they will give the sum of Five Pounds for every acre of land planted with Madder, as far as one hundred acres, in England or Wales; but in case there should be claimants for more than one hundred acres, then the sum of Five Hundred Pounds to be divided amongst the claimants, in proportion for every acre of each respective claimant. It is required that the plants be of the growth of England or Wales, and that no less than twenty thousand plants be set on every acre. The time appointed for the planting of the sets, is to be from the thirty-first of March, 1765; to the first of March, 1766. Proper certificates of all those conditions are to be sent to, and received by, the secretary of the Society, on or before the first Tuesday in November, 1766, inclusive; after which day no certificates or claimants will be allowed of.

N. B. Receipts

N. B. Receipts of the purchase of the plants, if not of their own growth, as well as the above-mentioned certificates, are to be produced.

95. To the person who shall raise the greatest quantity of Madder upon an acre, the quantity to be determined by the weight of the roots when taken up and cleaned; the candidates to give a particular account of their manner of culture; Twenty Pounds.—The certificates of the weight of the roots when cleaned, to be sent in on or before the first Wednesday in November, 1768.

96. WILD MADDER. To the person who shall plant and cultivate the greatest number of plants (not less than five hundred) of the Wild Ever-green Madder, of which a great quantity grows in Devonshire; Twenty Pounds.—Certificates of the number of the plants, with twenty of the plants, to be sent to the Society on or before the second Wednesday in November, 1766.

97. BEE-HIVES. To the person who shall be possessed of the greatest number of Hives or Boxes of his own raising, stocked with living Bees, (not less than eighty) on the first of February, 1766; a Gold Medal.

98. For the second greatest number, (not less than sixty) a Silver Medal.

99. A premium of Five Pounds will be given to every person who shall have in his possession, on February the first 1766, being his own property, any number of stocks of living Bees in Hives or Boxes, not less than thirty. But in case there should be above forty claimants, then the sum of Two Hundred Pounds shall be distributed between the candidates in proportion to the number of claimants.—Certificates to be delivered in, on or before the first of March, 1766.

N. B. The same person cannot be claimant both for the honorary and pecuniary premiums. The choice is left to the candidate.

PRESERVING THE LIVES OF BEES. Whereas the usual method of saving the Honey from Stocks or Hives is by destroying the Bees; and whereas it is found by experience, that the Honey and Wax may be obtained
and

and the Bees preserved at the same time ; by which much larger quantities of both Wax and Honey are collected ;

100. The Society will give a sum, not exceeding Two Hundred Pounds, for collecting Wax, and preserving the Lives of the Bees, in the following proportion : to every person who shall collect from stocks of bees, his own property, within the year 1767, ten pounds of clean merchantable wax, without destroying the bees, leaving a sufficient quantity of honey for their winter sustenance ; Five Pounds. But in case there shall be above forty claimants, then the sum of Two Hundred Pounds shall be distributed among the candidates, in proportion to the number of claimants.—Certificates of the quantity of wax, and of the bees in each stock being alive, on the first of February, 1768, to be delivered on or before the first of March following.

N. B. A complete apparatus, for the purposes above mentioned, may be seen at the Society's office in the Strand.

101. DRILL-PLOUGH. For the best Drill-Plough that shall drill, sow, and cover the corn or seed at the same time, being an improvement upon such drill-ploughs as are already known or in use ; Fifty Pounds.—Certificates of the performance, describing the manner and distance of dropping the corn or seed, together with the plough itself, to be produced to the Society on or before the last Tuesday in December, 1765.

N. B. The plough that obtains the premium, shall be the property of the Society.

102. MACHINE FOR DRAINING LANDS. For a Plough or Machine, of the simplest construction, which shall, with the least force, cut a new Drain one foot in depth perpendicular, one foot eight inches wide at the top, and ten inches at bottom ; both sides of the drain equally sloping, and the earth to be equally thrown out on both sides ; Fifty Guineas.—Certificates of the machine having performed the work agreeable to the terms of the advertisement, must be delivered in, together with a model, on or before the first Wednesday in December, 1765.

103. The

103. The like premium, and on the same conditions, will be given for a Machine for Draining Land in the year 1766.—The certificates to be delivered in, together with a model, on or before the first Wednesday in December, 1766.

NUMBER XCI.

Premiums offered by the Society, for Encouraging and Improving Manufactures.*

202. PAPER for COPPER-PLATES.

FOR making three reams of Paper equal to the French Paper, proper for receiving the best impressions of Copper-Plates; to be produced on or before the first Tuesday in February, 1766; Twenty-five Pounds.

203. For making three reams of Paper nearest in quality to the French Paper, proper for receiving the best impressions of Copper-Plates; to be produced on or before the first Tuesday in February, 1766; Twenty-five Pounds.

A certificate to the satisfaction of the Society will be required, that the paper was made in England or Wales.

204. SPINNING-WHEELS. For the best improvement in Spinning-Wheels, where the thread is guided by the fingers only, and adapted for spinning either wool, cotton, flax or silk, in which cheapness and simplicity in the construction will be considered as part of its merit; to be produced on or before the first Tuesday in February, 1766; Fifty Pounds.

205. For the next best, Twenty Pounds.

206. CLEANSING BROWN OSNABURGS. To the person who shall reveal to the Society, on or before the first Tuesday in December, 1765, the cheapest and most effectual method of cleansing or whitening the flax, for making that kind of British or Irish linen, called
Brown

* From 104 to 201 inclusive, comprehending the premiums for Discoveries and Improvements in Chemistry, Dying and Mineralogy, and for promoting Polite Arts, we at present, for want of room, omit. R. A.

Brown Osnaburgs, so as to be of the same colour as the foreign Brown Osnaburgs; One Hundred Pounds.

N. B. A quantity of the flax cleaned or whitened according to the method proposed, (not less than twenty pounds) must be produced to the Society for examination and trial; and the method must be practicable without impairing the strength of the linen when manufactured, and not increase the expence, so as to cause any material alteration in the price.

FINE LINEN YARN. For fine Linen Yarn fit for lace or number thread.

207. To every girl under eighteen years of age, who shall produce to the Society two pounds weight of the above Thread, spun by themselves, the quality being judged good and merchantable; Three Guineas.

N. B. If there are more than ten candidates, then Thirty Guineas to be divided among them, according to the evenness and fineness of the thread; the same to be spun after the first of April, 1765, and produced to the Society on or before the first Tuesday in February, 1766.

An ounce of each of the parcels which gain premiums to remain the property of the Society.

Fine Linen Yarn fit for lace or number thread, by any women above eighteen years of age, spun entirely by themselves after the first of April, 1765; and to be produced on or before the first Tuesday in February, 1766.

208. For any quantity, (not less than five pounds weight) the finest and best in quality; Twelve Guineas.

209. For the second best, (not less than four pounds weight) Eight Guineas.

210. For the third best, (not less than three pounds) Five Guineas.

One ounce of each of the parcels which gain premiums to remain the property of the Society.

N. B. Any person desiring to be supplied with the form of a certificate for the premiums relating to manufactures, the same may be had by applying, by letter or otherwise, to the register at the Society's office in London.

211. IMPROVEMENT of the STOCKING-FRAME. The Society will give to the person who shall make the greatest improvement in the Stocking-Frame, One Hundred Pounds. To be produced on or before the first Tuesday in February, 1766.

N. B. The fineness of the gage of the silk-frame will be considered as part of its merit.

212. MACHINE for WINDING and DOUBLING WORSTED, THREAD, or COTTON. To the person who shall invent the best and most simple portable Machine for winding from the Skain, and doubling Worsted, Thread, or Cotton, not less than twelve single threads into three or four threads in each twist; Twenty-five Pounds.

FINE BROAD-CLOTH fit for the SOUTHERN MARKETS. Whereas, notwithstanding the manifest superiority of the best English Broad-Cloths, there is a kind of fine Cloths in much demand at several foreign markets, and particularly those of the southern countries of Europe, especially of the following colours, viz. Scarlet, Black, Blue, Green, and White; the chief commendatory qualities of which cloths are fineness, lightness, a springiness of texture that serves effectually to imbibe the dyes; so small a degree of pressure as will not injure the colours, or occasion spots from rain; and a peculiar kind of lift which is essential in some uses; the Society, from a desire of contributing all means in their power for extending our most valuable commerce in exported manufactures, do offer the following premiums, on the conditions annexed.

213. To the person, or persons (being partners in trade) who shall, on or before the first day of December, 1765, have made and sold the greatest number of pieces, not less than thirty, of such Cloths as are above described, and according to the patterns delivered; each piece to be as wide as the pattern, and of the usual length of Broad-Cloth; One Hundred Pounds.

214. To the person, or partnership, who shall have made and sold the next greatest number of such pieces,

pieces, not less than twenty, in like manner; Sixty Pounds.

215. To the person, or partnership, who shall have made and sold the third greatest number of pieces, not less than ten, in like manner; Forty Pounds.

Satisfactory certificates of the making and selling of the said cloths, with the names of the purchasers, the dates of sales, and the prices sold at; also, a piece of cloth (for the Society's inspection only) from each candidate, dyed either scarlet or black, and properly pressed, must be sent in on or before the second Tuesday in December, 1765.

N. B. Patterns of those kinds of cloths, for which these premiums are offered, are ready to be delivered by the register of the Society at their office in the Strand. But as the nature of markets may make an assortment of qualities requisite, the candidates are hereby informed, that the Society allows of varying the qualities of their cloths for the sake of assorting them, provided the whole extent of the variations in pieces do not exceed the limits of two shillings *per* yard: however, the pieces sent in for inspection must be of the best quality.

216. KNITTING THREAD LACE. For the greatest quantity of Thread Lace, not less than six yards in length, nor less than two inches and a half in width, knit with needles, and made by one person; the goodness, clearness, and fineness of the work, and beauty of the pattern, to determine the preference; Thirty Guineas.

The above thirty guineas to be divided according to the merit of the candidates; to be produced on or before the first Tuesday in January, 1766.

217. KNITTING MITTS. For the greatest quantity of Mitts made of thread, in imitation of lace, and made with knitting-needles, fit for womens wear; not less than one dozen pair; each pair to be not less than fourteen inches in length, made by one person; the goodness, clearness, and fineness of the work, and beauty of the pattern, to determine the preference; Twenty Guineas.

The whole sum to be divided in proportion to the merit; to be produced on or before the first Tuesday in January, 1766.

N. B. The persons who gain any of the above premiums to leave one yard of the lace, and one pair of mitts, as the property of the Society.

218. WATCH FUSEE-CHAINS. To the person who shall, before the last Tuesday in December, 1766, have instructed in the best manner, in any one manufactory, the greatest number of women and girls, not less than six, in making Watch Fusee-Chains; Thirty Pounds.

N. B. Certificates are to be produced, that the several persons so taught do actually gain their livelihood by making such fusee-chains at the time of the claim.

N U M B E R X C I I I .

A Method of Ploughing, peculiar to Egypt, recorded by Hæfcliquist in his Travels for discovering the Natural History of Egypt and Palestine.

GENTLEMEN,

AS I esteem your work a repository for every thing that is either useful or curious in agriculture, I cannot resist the temptation I have of communicating to you a method of ploughing, peculiar, I believe, to the Egyptian farmers.

This is recorded by Hæfcliquist in his Travels and Observations on Subjects of Natural History, published by the celebrated Linnæus,

It is well known, that in some parts of Egypt very little rain falls in the whole year; the amazing fertility of their soil entirely depending on the annual overflowing of the Nile.

Farmers are very sensible, that when corn is sown, the land should not be over dry, as in that case it will frequently perish, instead of germinating, and putting forth its root and blade. Now, in Egypt, at one of their sowing seasons, the earth appears to be quite parched up, to which they are forced to apply an artificial remedy, or it would

would be to little purpose for them to lay their corn in the ground: when they give the last ploughing, the bottom of each furrow is moistened with water, after a very easy and simple method.

From one of the plough-handles to the back of the share there runs a small tube for the conveyance of the water from the ploughman, who has a leathern bag full of it hanging over his shoulder, in the bottom of which bag is a pipe, which comes under the man's arm, and is by that means inserted in the upper end of the tube above mentioned.

It is easy to conceive, that when the diameter of the bore of the tube is of a proper size, proportioned to the quantity of water that is to be laid into the bottom of the furrow, as the plough goes forward, and with its share opens a furrow, the tube sprinkles the bottom of it with water, thereby making a moist bed for the seed.

In Egypt, the effects of this slight watering are astonishing; and I have no doubt but that the practice might, to great advantage, be introduced in England.

In a dry spring, our farmers are greatly puzzled to get their barley and oats into the ground, as they frequently wait week after week for rain, till it is at length almost too late to sow the corn at all: now, I should imagine, that if some such method as that above described could be invented or practised to moisten the land on which the seed was to be sown, it would nearly answer the same purpose as waiting for rain. It is amazing to think how small a quantity of water, properly applied, will be of infinite service.

When the water is applied in the manner above mentioned, the moistened earth and seed are covered by the next bout of the plough; so that there is no immediate danger of the water being exhaled by the attractive heat of the sun: and indeed I have not the least doubt but that, in this method of application, three gallons of water would do as much service as twenty times the quantity sprinkled over the surface of the land in the ordinary way with a watering pot or engine,

I could,

I could, you may well imagine, enlarge a great deal more on the subject; but I cannot conceive there is any necessity for doing it, as the intelligent part of your readers will undoubtedly understand my meaning.

I must, however, before I conclude, say a word or two more about Haselquist, to whom I am indebted for the above hint.

This gentleman was born in Sweden, being a disciple of the great Linnæus, and studying under him and others physic and botany. In this last science he made an astonishing progress, and, prompted by his public spirit, he undertook a voyage to Palestine, on purpose to examine into the natural history of that country, which had till then been unnoticed by any naturalist. In this voyage he made many discoveries of great importance, to which the learned of Europe are now no strangers.

It is true, he lost his life in the expedition, but he has left behind him a name that will continue to the latest ages; and his journal and observations were digested and published by the great Linnæus, who thought it a tribute justly due to the memory of his pupil and friend.

I should be glad if some of your practical correspondents would advise me with respect to the management of a part of my glebe. It is a field of nine acres, and consists of a thin coat of light earth over a hard gravel. It has not been in tillage for some years, and when it was, it bore no burthens of corn, as you may imagine. I generally feed it; the grass is sweet, but there is little of it, unless the weather happens to be wet in the spring and summer.

About the distance of two hundred yards from this field I have a clay-pit: now, some of my neighbours advise me to cover the surface with clay.

I should be glad to be informed how many loads I ought to lay on an acre, and whether, supposing the clay to be of a good quality, there is any likelihood of my being reimbursed my expences, being only tenant for life. I am, I thank my God, healthy, and about forty years of age; and,

GENTLEMEN,

Your humble servant,

May 17, 1765.

A KENTISH RECTOR.

NUMBER XCIV.

To the Editors of the MUSEUM RUSTICUM.

GENTLEMEN,

THE enclosed letter is from a gentleman of great consideration in this country, and a constant reader of your work. The better to convey his meaning, I have sent you his letter to me, which you will much oblige me by publishing as soon as possible *, or at least the substance of it, with such additional notes as you may think necessary to obtain the end proposed.

I am, GENTLEMEN,

Your humble servant,

Ireland,
May 7, 1765.

AN ENGLISHMAN.

The Letter above referred to, containing some Queries respecting the Uses to which the Refuse of Oil-Mills (Rape-Cakes and Linseed-Cakes) is applied.

To ***** Esq;

DEAR SIR,

I Know you sometimes correspond with the editors of the *Museum Rusticum*: you would oblige me very much by writing to those gentlemen to publish the several uses to which the refuse of oil-mills (rape-cakes and linseed-cakes) is put. I know it is used as a manure, and also given to horned

* We are very glad to embrace every occasion that presents itself, wherein we can oblige this practical and very sensible correspondent: we know him to be a true friend to agriculture, and could wish he would give us more frequent opportunities of complying with his requests. E.

horned cattle; but in what manner it is prepared, and what quantities given, whether alone or mixed with other food, whether to young and growing, or to old cattle at the time of fattening, or to working horses*; these are all points I would wish to be particularly described. If the *Museum* proposes the question, the people who have great mills in Lincolnshire, and in Holland, will readily give the public an answer.

The knowledge of this would be material to me, as there are large mills of the kind in the neighbourhood of my estate, the refuse of which at present is of very little use †. I am, sincerely and affectionately,

Yours,

* We imagine this gentleman will meet with some satisfaction in reading the note under page 378. of this Volume, as he will there find that oil-cakes may be given to young and growing, as well as fattening cattle. Some months ago a steer and heifer were sent up to Smithfield, supposed to be the largest and fattest that ever appeared in that market. One of the editors of this work thought it worth his while to enquire what they had been fed with, and he found it was with oil-cakes unseasoned, to which they were so inured, that the people in care of them were obliged to give them the same food on the road, and even after their arrival in London. The butchers who saw them declared it to be their opinion, that the heifer would turn out as fine meat as ever was tasted; yet we must not omit observing, that some intelligent farmers think that oxen fed with oil-cakes yield a rank beef; but for our parts we cannot subscribe to this opinion, having frequently eaten fine-flavoured, mellow, sweet beef from beasts fed with oil-cakes. The quality of these cakes, in making cows give plenty of milk, is worthy of attention. We should be extremely obliged to any gentleman, farmer, or grazier, who will send us answers to the queries contained in this letter, particularly whether oil-cakes are wholesome food for horses. E.

* To what is said in the above note we may add, that oil-cakes are frequently given, as well in England as in Flanders, mixed with bran, to fattening cattle, and even to sheep. E.

Museum Rusticum, &c.

For J U N E, 1765.

VOLUME the FOURTH.

N U M B E R XCIV.

On the Profits attending a Dairy.

GENTLEMEN,

I Embrace with pleasure an opportunity of returning my thanks to the author of the paper, Numb. LXIII. page 274. of this Volume, signed Y. for his readiness to communicate his experience in the subject desired, from which, I make no doubt, some instruction may be gained; and indeed, gentlemen, so open and generous a practical correspondent as Y. cannot fail adding merit to your publications, as often as he may be so obliging as to communicate his experimental knowledge in farming affairs, on which, it is very clear, from the paper Numb. LXII. in this Volume, he has made some very judicious remarks, which, if attended to, may be of service to the practical farmer; for certainly matters of fact, grounded

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en

on experience, are most valid, and are greatly to be preferred to speculative knowledge.

The account in his letter of the expences and productions attending four cows, I believe, is very just, as do I also that of the pigs; but I do not apprehend that it any ways tends to prove my assertion untrue, or justly to impeach our practice, in these parts, of managing a dairy: for, from the calculation of the nine acres profit of the grazing made in Numb. LXXIV. Vol. III. I observe, that, on an average, *communibus annis*, (one year with the other) there were eight acres and a half mowed; so that there were appropriated to the four cows and old ewes (crones) wholly,

	<i>l.</i>	<i>s.</i>	<i>d.</i>
Eleven acres and a half, at fifteen shillings <i>per</i> acre, is		8	12 6
Eight acres and a half of after-grass, at seven shillings and six-pence <i>per</i> acre, for the remainder of the year after being mowed —		3	3 9
		11	16 3
Deduct for the ewes winter-feed, (for seventeen, the average in the nine years) at four shillings <i>per</i> head, —		3	8 0
To be charged to the annual expence of four cows		8	8 3
Expences attending the winter-feed of the said four cows, as it does not appear any part thereof grew on the twenty acres; the average of two years is		5	0 7½
One year's expence attending four cows, <i>per</i> Y.'s own accounts, —		13	8 10½

The produce, *per* same accounts, on an average of two years, (making the allowance as *per* E.'s note, and three-pence wrong in adding up) is

	22	12	2½
Nett profit on four cows for one year, <i>per</i> Y.'s own account, —	9	3	4½
5	Thus		

L. s. d.

Thus it appears, admitting Y.'s two accounts of expences to be for two years. But notwithstanding the appearance these two sums of four pounds six shillings and four-pence, and five pounds fourteen shillings and ten-pence half-penny, have of being the expence attending four cows two winters, yet I think, that from April 27, 1763, to May 6, 1764, includes but one; and in which time it may be reasonable to apprehend the hay and straw therein mentioned were consumed for fodder, (except the two hundred weight of hay in the first *item*, which, it is very probable, completed the feed of the preceding winter) as it does not appear any remained in stock; and that the one pound ten shillings, charged for firing, was also used in that time: therefore, if the first article of eight pounds ten shillings, and the two last, amounting to fifteen shillings and one half-penny, in the expences of 1764, be rejected, all the others, which are divided into two experiments, may very justly be looked on to be but one year's expence, and amount to

	_____	8 12 4
Which being added to the rent	_____	8 8 3

Makes the expence attending four cows one year, exclusive of labour,	—	—	17 0 7
--	---	---	--------

Deduct this from the average produce on two years, amounting to	—	_____	22 12 2½
---	---	-------	----------

Nett profit on four cows for one year is	—	5 11 7½
--	---	---------

which is one pound six shillings and seven-pence three farthings *per cow per annum*, the whey and butter-milk excepted, which, from a cow, can be no great quantity; for, in the account of produce, I observe, that the cheese, in the year 1763, was sold for two-pence half-penny *per pound*, and in 1764, for two-pence half-penny, and some for two-

3 F 2

pence

pence *per* pound, a price in those years (the scarcity of the article considered) which indicates it to be not of the best sort, but what is with us called half cowherd-milk* cheese, that is, the night's milk skimmed (fleeted), and the morning's milk fresh from the cow, mixed together, and from which method nothing could be for the pigs from it but whey, and what butter-milk came from the cream of half the milk, which amounts to very little from four cows only; therefore the profits arising from pigs seem evidently to be from something else beside the pasture-land only, as neither grains (drains), peas, barley, gurgins (shorts), bran, oats, turneps, cabbages, or clover grew thereon, and all of which, it appears from the accounts, were made use of in feeding the pigs.

Hence, I think, it is clear what I asserted is true, with respect to the profit attending a cow in this county, even if the first account only be admitted, especially when the difference in distance from the metropolis be considered; as our cheese, of the above sort, sold, in 1763, for about twenty shillings *per* hundred weight, and in 1764 about eighteen shillings *per* hundred weight, on an average; and that the twenty acres in question were an addition to a farm, for which reason no account of labour is taken, as it is supposed no *extra* servants were necessary.

And, I think, from what is above observed, it helps to strengthen my assertion, that agriculture is that art on which the greatest dependence is to be had, and that it appears to be most profitable to the farmer.

With respect to inattention, I cannot yet charge myself therewith in this affair, though I may, perhaps, with folly, in taking any notice of a calculation which so evidently contradicts itself; nor have I any need to suppose corn grew spontaneously on the pasture-land, since, from the accounts, it is very evident the hogs
were

* Implies milk as received from the hand of the cowherd, a person whose office is to attend upon, and look after, the herd of cows in places where they run in commons, RURICOLA.

were fed with grains, peas, barley, gurgins, bran, oats, turneps, cabbages, and clover, not any one article of which was the production thereof. And, notwithstanding it is our lots to be so wretchedly situated, in Y.'s opinion, as to be content with forty shillings *per cow per annum*, nett profit, and pigs included, in the occupation of a farm *wholly* to a dairy, I cannot find, from any of his calculations or accounts, any method which is likely to exceed it; for his method of feeding hogs is altogether as eligible where there are no cows as where there are ever so many.

I would just say, for the information of Y. that we have not only some horses, but a considerable number of sheep, and some hay, and expect to have a pretty good crop of the latter this year.

I apprehend no occasion to trouble you with the account of managing a dairy, which, in Y.'s opinion, is so pitiful, since, from what is already remarked, that gentleman has done it for me; but may, in some future paper, give an account of the method of making the cheese called Double Gloucester, worth now fourpence *per pound* by the hundred, and some other sorts for which this county is famous*.

I am, a practical correspondent,

RURICOLA GLOCESTRIS.
L.

* We are always much obliged to this correspondent for his letters, and shall be particularly so, when he sends us the above account, which cannot but be acceptable to our readers in general. E.

NUM-

NUMBER XCV.

*Premiums offered by the Society for the Encouragement of Arts,
Manufactures, and Commerce,*

For Discoveries and Improvements in CHEMISTRY,
DYING, and MINERALOGY.

104. SAL AMMONIAC. **F**OR making the greatest quantity of Sal Ammoniac, equal in goodness to the best imported, (not less than two tons) prepared at one manufactory in England or Wales, fifty pounds weight of which to be produced as a sample, on or before the third Tuesday in March, 1766; One Hundred Pounds.

105. SUBSTITUTE FOR BORAX. For five pounds weight of any substance made of British materials that will answer the uses of Borax in fodering, to be produced on or before the first Tuesday in January, 1766; Fifty Pounds.

106. MANUFACTORY OF ZAFFRE AND SMALT. To the person who shall make, at any one manufactory in Great-Britain, from British or Irish Cobalt, the best and greatest quantity of Zaffre and Smalt, not less than two hundred pounds of merchantable Zaffre, and one thousand pounds of merchantable Smalt, fit for the manufactures of this kindom; One Hundred Pounds.

N. B. Ten pounds of the zaffre, and twenty pounds weight of the smalt, to be produced to the Society, as specimens, on or before the second Tuesday in January, 1766.

Ten pounds of the cobalt must also be produced in order to a counter proof, and satisfactory certificates will likewise be required.

107. PIG-IRON. For making the largest quantity of Pig-iron (not less than one hundred tons) with Coak only, equally good as that made with Wood Charcoal, fit for being manufactured into tough Bar-iron, and which Bar-iron may be sold on the same terms as the Swedish; One Hundred and Fifty Pounds.

108. BAR-

108. **BAR-IRON.** For making the greatest quantity (not less than ten tons) of tough Bar-Iron with coak only, from coak pigs, equal in goodness to that made from pigs smelted by wood charcoal; One Hundred and Fifty Pounds.

Samples (not less than one hundred weight each) to be produced to the Society in the month of December, 1765.

N. B. Satisfactory proofs will be expected of the quantity manufactured.

109. **COMPOSITION FOR PRESERVING SHIPS BOTTOMS.** It is proposed to give, for the best and cheapest composition which shall effectually secure Ships Bottoms from Worms, Two Hundred Pounds.

Each candidate is required to lay, during one year, two planks, one payed or prepared with his composition, the other unpayed, in a place where the worms are known to be; and, before he will be admitted a candidate, must produce a certificate that the prepared plank was preserved from the worms, and that the other was damaged thereby.

The Society will then provide planks for each candidate that shall apply for them, which planks are to be returned, payed, or otherwise prepared in order for trial, on or before the first of December, 1765.

110. **ENAMEL.** To any person, in England or Wales, who shall make the best White Enamel, the same being equal in colour, and all other properties, to the Venetian; Fifty Pounds.

The quantity must be two hundred pounds weight, produced to the Society on or before the last Tuesday in January, 1766.

111. **RED COLOUR FOR ENAMEL PAINTERS.** To the person who shall make the finest true Red Colour for the use of Enamel Painters, which will bear repeated and sufficiently strong fires without change; the quantity to be produced not less than two ounces, from which a quarter of an ounce will be taken for trials; the remainder to be sealed up and returned to the candidate; Fifty Pounds.

To be produced on or before the second Tuesday in January, 1766.

N. B. The

N. B. The preference will be given to that colour which approaches nearest to fine vermillion. But no regard will be had to any that verges at all towards the purple.

112. DYING BLUE. For the best specimen of woollen cloth or yarn, dyed on the principle of making Prussian Blue, or by any other method not now in common use; Fifty Pounds.

One yard of cloth, or one pound of yarn, to be produced to the Society on or before the first Tuesday in January, 1766.

113. DYING CLOTH IN GRAIN. For the greatest improvement in Dying Cloth in Grain with respect to quality and cheapness, not less than two yards to be produced as a specimen, on or before the second Tuesday in December, 1765; Fifty Pounds.

114. DITTO SILK. For the greatest improvement in Dying Silk in Grain, with respect to quality and cheapness, not less than one pound to be produced as a specimen, on or before the second Tuesday in December, 1765; Forty Pounds.

115. DYING COTTON. For the greatest improvement in Dying Cotton Scarlet or Crimson in Grain with respect to quality and cheapness, not less than one pound to be produced as a specimen, on or before the second Tuesday in December, 1765; Fifty Pounds.

N. B. The cloths, silks, and cottons, to be brought to the register of the Society, and sealed by him before they are dyed.

116. DYING YARN YELLOW. For the greatest improvement in Dying Cotton or Linen Yarn Yellow; a specimen, not less than one pound, must be produced on or before the first Tuesday in December, 1765; Forty Pounds.

117. DITTO GREEN. For the greatest improvement in Dying Cotton or Linen Yarn Green, not less than one pound to be produced on or before the first Tuesday in December, 1765; Twenty Pounds.

118. CRUCIBLES FOR ASSAYING TIN ORES. For the making in Great-Britain not less than five hundred Crucibles,

Crucibles, or Melting-Pots, of British materials, as fit for the purposes of assaying Tin Ores as those imported under the name of black-lead, or blue pots; Fifty Pounds.

To be produced on or before the end of January, 1766.

NUMBER. XCVI.

Premiums offered by the Society, for Invention and Improvement in Mechanics.*

219. MACHINE for EXTRACTING WATER out of SHIPS.

TO the person who shall make, and prove by actual experiment on board of some ship in the river Thames, to the satisfaction of the Society, on or before the first Tuesday in May, 1766, the best Pump, Engine, or other Machine, for extracting Water out of Ships, to be essentially superior to the chain-pump, or any other engine now known or in use, as well for the expedition of work, as for the saving of the labour of men; and in which simplicity will be considered as a material part of its merit; One Hundred Pounds.

Notes, That all models which do at any time obtain premiums, are to remain with, and be the property of, the Society; and no premium will in any case be given, unless the performance be deemed by the Society to have sufficient merit to deserve encouragement: and the Society reserve to themselves the power of giving, in all cases, such part only of any premium as the performance shall be by them judged to deserve.

* From No. 119. to 201. inclusive, comprehending the premiums for promoting Polite Arts, must be still longer postponed for want of room.

NUMBER XCVII.

Premiums offered by the Society, for the Advantage of the British American Dominions.

220. CINNAMON TREE. **T**HE true cinnamon-tree having been found to grow and produce good cinnamon in the island of Guadaloupe, and there being no doubt but that, under the same circumstances of soil and situation between the tropics, it would prosper equally well in other parts of his Majesty's colonies; the Society do offer to the person who shall, in any of his Majesty's colonies, within five years from the date hereof in 1761, raise or plant, cultivate and properly secure, the greatest number of Cinnamon-Trees, (not less than two hundred) One Hundred Pounds.

221. And under the like circumstances for the next greatest quantity, (not less than one hundred) Fifty Pounds.

Each claimant for these premiums will be required to produce, within six months after the expiration of the said five years respectively, a certificate under the hand of the governor of the colony, that a sufficient proof had been made before him, that the number of trees mentioned in the said certificate are under actual improvement and cultivation.

222. IRON from BLACK SAND in AMERICA. For the greatest quantity of merchantable Bar-Iron, made of the Black Sand found in America, and imported into the port of London on or before the twenty-fifth of December, 1765, (not less than fifty tons) One Hundred Pounds.

223. For the second greatest quantity, (not less than thirty tons) Sixty Pounds.

224. For the third greatest quantity, (not less than twenty tons) Forty Pounds.

225. To

225. To the person who shall make and import, or cause to be imported into the port of London, on or before the twenty-fifth of December, 1766, the greatest quantity of merchantable Bar-Iron, made of the Black Sand found in America, (not less than fifty tons) One Hundred Pounds.

226. For the second greatest quantity, (not less than thirty tons) Sixty Pounds.

227. For the third greatest quantity, (not less than twenty tons) Forty Pounds.

228. POT-ASH. For every ton of merchantable Pot-Ash, made in any of his Majesty's dominions in America, imported into the port of London within the year 1765; Four Pounds: except the several claims shall amount to a greater sum than four hundred pounds; in which case the said Four Hundred Pounds shall be divided amongst the claimants, in proportion to the respective quantities imported by each.

229. PEARL-ASH. For every ton of merchantable Pearl-Ash, made in any of his Majesty's dominions in America, imported into the port of London within the year 1765; Four Pounds: except the several claims shall amount to a greater sum than four hundred pounds; in which case the said Four Hundred Pounds shall be divided amongst the claimants, in proportion to the respective quantities imported by each.

230. The same premium will be given for Pearl-Ash imported in the year 1766.

231. COCHINEAL. For the greatest quantity of good merchantable Cochineal, (not less than twenty-five pounds weight) that shall be produced in, and imported from Jamaica, the other West-India Islands, and his Majesty's dominions in North-America, considered as three separate districts, into the port of London, between the twenty-fifth of April, 1765, and the twenty-fifth of April, 1766; One Hundred Pounds.

232. For the second greatest quantity, (not less than twenty pounds weight) Sixty Pounds.

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233. For

233. For the third greatest quantity, (not less than fifteen pounds weight) Forty Pounds.

234. For the fourth greatest quantity, (not less than ten pounds weight) Twenty Pounds.

235. For the fifth greatest quantity, (not less than five pounds weight) Ten Pounds.

236. For the greatest quantity of merchantable Cochineal, (not less than fifteen pounds weight) that shall be produced in, and imported from, his Majesty's dominions in North-America, the West-India Islands, and the Bahama Islands, into the port of London, between the twenty-fifth of April, 1766, and the twenty-fifth of April, 1767; Forty Pounds.

237. For the second greatest quantity, (not less than ten pounds) Twenty Pounds.

238. For the third greatest quantity, (not less than five pounds) Ten Pounds.

239. STURGEON. For the greatest quantity of good merchantable Sturgeon, (not less than fifty kegs) each keg containing five gallons, that shall be cured in, and imported from, any of the British colonies upon the continent of North-America, into the port of London, between the second Tuesday in December, 1764, and the second Tuesday in December, 1765; Fifty Pounds.

240. For the next greatest quantity, (not less than thirty kegs) as above; Twenty-five Pounds.

241. RAW SILK. For the greatest quantity of good merchantable Raw Silk, (not less than one hundred pounds weight) produced in, and imported from, any of the British American colonies (Georgia, South-Carolina, North-Carolina, Connecticut, and Pennsylvania excepted, those colonies having a particular premium) into the port of London, between the first of January, 1762, and the first of January, 1766; One Hundred Pounds.

242. For the next greatest quantity, (not less than fifty pounds weight) Fifty Pounds.

243. SCAMMONY. For the greatest quantity of good merchantable Scammony, (not less than ten pounds weight)

weight) that shall be produced in, and imported from, any of the British colonies in America, into the port of London, between the first of January, 1765, and the first of January, 1766; Fifty Pounds.

244. For the next greatest quantity, (not less than five pounds weight) Twenty-five Pounds.

245, 246. The same premiums will be given for Scammony imported from any of the British colonies in America, between the first of January, 1766, and the first of January, 1767.

247. OPIUM. For the greatest quantity of Opium, equal in goodness to the best Turkey opium, (not less than ten pounds weight) that shall be produced in, and imported from, any of his Majesty's dominions in America, into the port of London, between the twenty-fifth of March, 1765, and the twenty-fifth of March, 1766; One Hundred Pounds.

248. For the next greatest quantity, (not less than five pounds weight) Fifty Pounds.

249. For the greatest quantity of good merchantable Safflower, (not less than fifty pounds weight) that shall be produced in, and imported from, any of the British colonies in America, into the port of London, between the first of January, 1765, and the first of January, 1766; Fifty Pounds.

250. For the next greatest quantity, (not less than twenty-five pounds weight) Twenty-five Pounds.

The several requisites contained in the foregoing articles are to be ascertained by the following proofs, and in the following manner, *viz.*

First, by a certificate under the hand and seal of any known magistrate, or other public officer of the county, parish, precinct, township, or other division of the island or colony, within which parish, county, or other division, the article for which the premium is claimed has been produced; that the said article, expressing the quantity and the plantation whereon produced, is, of his own knowledge, or has been proved before him to have been, the

the actual produce of such island, or colony, or county, parish, or other division thereof, between the times specified in each advertisement.

Secondly, by a certificate under the hand and seal of the proper officer of the port in the plantations in which such article shall be shipped for exportation, that the said article, expressing the quantity, has been actually entered with him for exportation to Great-Britain as the produce of the said plantations.

Thirdly, a certificate under the hand and seal of the proper officer of the port of London, that such article, expressing the quantity, has been actually imported from the plantations, expressing the island or colony from whence imported.

N. B. The goodness of the article for which the premium is claimed, must be proved by a certificate under the hand and seal of some well-known merchant or broker, dealing in the article for which the premium is claimed, or by such experiment, or examination, as the Society shall judge necessary.

The requisites in the continuation of the premiums for iron from black sand of America, pearl-ash and cochineal, are to be ascertained by the following proofs, *viz.*

The first three articles the same as before; but instead of the *N. B.* the following article is inserted, *viz.*

Fourthly, a certificate under the hand and seal of some well-known merchant or broker, dealing in the article for which the premium is claimed, of the goodness of such article; or proof may be made of its goodness by such other experiment and examination as the Society shall judge necessary.

251. OLIVE TREES. A premium of One Hundred Pounds will be given for the greatest number (not less than five hundred plants) of Olive Trees, of the same species as those from which the best Italian oil is produced, properly planted, and effectually fenced, secured, and cultivated, within any of the British colonies upon the continent of North-America, to the southward of the
river

river Delawar, considered as one district, between the twenty-fifth of April, 1763, and the twenty-fifth of April, 1766.

252. And Fifty Pounds for the next greatest quantity, not less than two hundred plants.

253. VINES for RAISINS. A premium of Three Hundred Pounds will be given to that person who shall, on the first of September, 1767, have, or be possessed of, a Vineyard or Plantation in any of the colonies on the continent of North-America, southward of the river Delawar, consisting of the greatest number of Vines, (not less than fifty) actually producing the true Malaga Grape, from which the best Raisins are made.

254. And One Hundred Pounds for a like Plantation or Vineyard, consisting of not less than twenty-five plants, producing the said Grapes.

255, 256. The same premiums for Vines for Raisins will be continued to the year 1770, with the following additional *N. B.*

N. B. It will be expected that the claimants for the above premiums should, at the time of making the claim, produce a quantity (not less than six pounds) of raisins, certified to have been actually produced from vines for which the premium is claimed.

257. VINES for WINES. A premium of Two Hundred Pounds will be given for the greatest number (not less than five hundred) of the Plants of the Vines, which produce those sorts of Wines now consumed in Great-Britain, which shall have been properly planted, and effectually fenced, secured, and cultivated, within any of the British colonies upon the continent of North-America, to the northward of the river Delawar, considered as one district, between the first of April, 1762, and the first of April, 1767.

258. And Fifty Pounds for the next greatest quantity, not less than one hundred plants.

259, 260. The like premiums will be given, upon the same conditions, for the greatest number of Vines in like manner

manner planted and cultivated as above, within the same time, in any of the British colonies upon the continent of North-America, to the southward of the river Delaware, considered as one district.

261, 262. And the same premiums, for the greatest quantity in like manner planted and cultivated within the same time, in the Bermuda Islands.

263, 264. The like premiums will be given, upon the same conditions, for the greatest number of Vines, which produce those sorts of Wines now consumed in Great-Britain, which shall have been properly planted, and effectually fenced, secured, and cultivated, within any of the British colonies upon the continent of North-America, to the southward of the river Delaware, or in the Bermuda Islands; each to be considered as one district, between the first of April, 1767, and the first of April, 1768.

265. A premium of Two Hundred Pounds will be given for the greatest number (not less than five hundred) of the Plants of the Vines actually producing the Grapes that yield those sorts of Wines now consumed in Great-Britain, which shall have been properly planted, and effectually fenced, secured, and cultivated, within any of the British colonies upon the continent of North-America, to the northward of the river Delaware, considered as one district, between the first of April, 1768, and the first of March, 1770.

266. And Fifty Pounds for the next greatest quantity, not less than one hundred plants.

267, 268. The like premiums will be given, upon the same conditions, for the greatest number of Vines in like manner planted and cultivated as above, within the same time, in any of the British colonies on the continent of North-America, to the southward of the river Delaware, considered as one district.

269, 270. And the same premiums, for the greatest quantity in like manner planted and cultivated, within the same time, in the Bermuda Islands.

271. CINNAMON. A premium of One Hundred Pounds will be given for the greatest number (not less than

than fifty) of the Plants of the true Cinnamon-Tree which now grows in the island of Guadalupe, properly raised or planted, and effectually fenced, secured, and cultivated, in any of the British islands in that part of America commonly called the West-Indies, between the first of January, 1763, and the first of January, 1767.

272. And Fifty Pounds for the next greatest quantity, not less than twenty-five plants.

273, 274. The like premiums will be given, upon the same conditions, for the greatest number of Cinnamon-Trees, properly planted, secured and cultivated as above, in the Bahama Islands, within the same time.

275. ALOES. The like premium of One Hundred Pounds will be given, upon the same conditions, for the greatest quantity (not less than fifty) of the Aloe Plants, of the same species as that from which the true socotorine aloe is produced, properly planted, and effectually fenced, secured, and cultivated, within any of the British islands in that part of America called the West-Indies, between the first of January, 1763, and the first of January, 1767.

276. And Fifty Pounds for the next greatest quantity, not less than fifty plants.

277, 278. The like premiums will be given, upon the same conditions, for the greatest number of Aloes, properly planted, and effectually fenced, secured, and cultivated, within the same time, in the Bahama and Bermuda islands.

N. B. The plant of the true socotorine aloe may be procured from most of the botanic gardens about London.

279. BARILLA. The like premium of One Hundred Pounds will be given, upon the same conditions, to any person who shall plant and properly cultivate the greatest quantity of land (not less than fifty acres) with Spanish Kali or Glass-wort, of the same species as that from which Barilla is produced, within any of the British colonies upon the continent of America, to the southward of the river Delawar, between the first of April, 1765, and the first of April, 1766.

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280. And

280. And Fifty Pounds for the next greatest number of acres, not less than twenty-five.

281, 282. The like premiums will be given, upon the same conditions; to any person who shall plant and properly cultivate the greatest quantity of land (not less than fifty acres) with Spanish Kali or Glass-wort, of the same species as that from which Barilla is produced, within any of the British colonies upon the continent of America, to the southward of the river Delaware, between the first of April, 1766, and the first of April, 1767.

The claims upon the foregoing articles of culture to be respectively ascertained by a certificate under the hand and seal of some known magistrate, or chief officer, of the county, parish, district, precinct, township, or other division, of the colony or island, within which parish, county, or other division, of such colony or island, the article for which the premium is claimed has been planted, That the said article, expressing the number of plants, (or acres, as the case shall be) and the name of the planter, has, of his own knowledge, or has been proved before him to have been planted, and effectually secured and cultivated within the said colony or island, between the time specified in the advertisement, and was under actual and proper culture at the time of signing such certificate.

283. HEMP. A premium of One Hundred Pounds will be given to the person who shall, between the first of January, 1765, and the first of January, 1766, produce the greatest quantity (not less than twenty tons) of good merchantable Hemp, fit for Cordage, from land not before used in that culture, in any part of the provinces of Nova-Scotia, Canada, New Hampshire, Massachusetts Bay, Connecticut, and Rhode Island, considered as one district.

284. For the second greatest quantity (not less than ten tons) Fifty Pounds.

285. For the third greatest quantity (not less than five tons) Twenty-five Pounds.

286,

286, 287, 288. The like premiums will be given, upon the same terms and conditions, for the greatest quantity of Hemp, produced in any parts of the provinces of New-America, New-Jersey, and Pennsylvania, considered as one district.

289, 290, 291. For the greatest quantity produced in any parts of the Pennsylvanian territories on the river Delawar, the provinces of Maryland and Virginia, considered as one district.

292, 293, 294. And for the greatest quantity produced in any parts of the provinces of North-Carolina, South-Carolina, and Georgia, considered as one district.

One set of premiums for each district, and the claim for each premium to be ascertained by a proper certificate, under the hand and seal of any magistrate, or other public officer, of the county, parish, precinct, township, or other division of the colony, within which the hemp for which the premium is claimed has been produced, that such hemp, expressing the particular quantity, and the name of the planter, was actually produced in the said county, parish, precinct, township, or other division, between the times mentioned in the advertisement; and that, in the opinion of proper and well-qualified judges, the same is merchantable, and fit for cordage.

295. SILK COCOONS, For every pound weight of Cocoons produced in the provinces of Georgia and South-Carolina in the year 1765, of a hard, weighty, and good substance, wherein one worm only has spun; Three-Pence.

296. For every pound weight of Cocoons produced in the same year, of a weaker, lighter, spotted, or bruised quality, though one worm only has spun in them; Two-Pence.

297. For every pound weight of Cocoons produced in the same year, wherein two worms have spun; One Penny.

The same premiums are continued for the year 1766.

N. B. These premiums will be paid under the direction of Mr. Ottolenghe, superintendant of the silk culture in

Georgia, to every person who shall bring his or her balls or cocoons to the public filature at Savannah; upon proof being made, to the said Mr. Ottolenghe's satisfaction, by every person claiming such premium, that the cocoons for which the premium is claimed are of such claimant's own raising and produce; and the sum which shall be so paid by the Society's correspondent as aforesaid, shall be reimbursed and repaid to him or his order by the Society, upon receiving his account of the same properly attested.

298. SILK, RAW. For every pound weight of merchantable Raw Silk raised and produced in the colonies of Connecticut, Pennsylvania, and North-Carolina, in the year 1765, Two Shillings and Six-Pence; the said premiums to be paid by the Society's correspondents in the respective colonies, *viz.*

Connecticut, by	{	Col. Phineas Lyman,
	{	The Rev. Mr. Thomas Clap, and
	{	Jared Ingersall, Esq;
Pennsylvania,	{	Benjamin Franklin, L. L. D. and
	{	John Hughes, Esq;
	{	George Pullock, Esq;
North-Carolina,	{	Cullen Pollock, Esq; and
	{	John Rutherford, Esq;

Upon proof being made, to their satisfaction, by every person claiming such premium, that the silk for which it is claimed has been actually and *bona fide* reeled from cocoons of such claimant's own raising and produce; and the sums which shall be so paid by the Society's correspondents as aforesaid, shall be reimbursed and paid to them respectively, or their order, by the Society, upon receiving their accounts properly attested.

The premiums for raw silk raised and produced in the colonies of Connecticut, Pennsylvania, and North-Carolina, are continued for the year 1766.

299. SARSAPARILLA. For the greatest quantity of good merchantable Sarsaparilla Root, (not less than five hundred pounds weight) that shall be produced in, and imported from, any of the British settlements or plantations

in that part of America commonly called the West-Indies; into the port of London, between the first of April, 1765, and the first of March, 1766, One Hundred Pounds.

300. For the next greatest quantity, (not less than two hundred pounds weight) Fifty Pounds.

301, 302. The like premiums will be given, and on the same conditions, for Sarsaparilla produced in, and imported from the provinces of Georgia, and South and North Carolina, considered as one distinct district.

303. NITRE IN AMERICA. For every thousand pounds weight of merchantable Salt-Petre, equal in goodness to the best imported from the East-Indies, made in any of his Majesty's dominions in America, and imported into the port of London in the year 1765, Five Pounds; except the several claims shall amount to a greater sum than three hundred pounds; in which case the said sum of Three Hundred Pounds shall be divided amongst the claimants, in proportion to the respective quantities imported by each.

304. The like premiums will be given, and on the same conditions, for Salt-Petre made in any of his Majesty's dominions in America, and imported into the port of London, in the year 1766.

305. COBALT IN AMERICA. To the person who shall discover Cobalt in his Majesty's dominions in America, and shall produce one hundred weight of the same to this Society, on or before the first of January, 1766; Fifty Pounds.

N. B. Satisfactory certificates of the place where it was discovered, and of the probability that a quantity may be had sufficient for a manufactory of zaffre and smalt, will be expected by the Society.

306. The like premium, and on the same conditions, will be given for Cobalt discovered in his Majesty's dominions in America, and produced to the Society on or before the first of January, 1767.

N. B. The claims arising from all the foregoing articles relative to the colonies must be made, and the certificates brought

brought into the Society within four months after the dates mentioned in the respective advertisements.

307. **PROVINCIAL GARDENS.** As the setting apart proper spots of land in our colonies in North-America, as gardens or nurseries for the making experiments in raising such rare and useful plants as are not the spontaneous growth of this kingdom, or of the said colonies, as well as for receiving such as are the produce of America, but at present not commonly known; and the appointing proper persons to superintend such gardens or nurseries, may be of great public utility in introducing a variety of articles of commerce, necessary for manufactures, medicine, or otherways, (which we are now obliged to take from foreign nations) thereby laying a foundation for a more extensive culture of them: the Society, desirous of promoting this object as far as lies within their province, and the nature of their design, do hereby declare, that in case the legislatures of any of the said colonies, or any other incorporate bodies, shall think fit to encourage such undertakings by public grant, or private contributions, the Society will, from time to time, as experiments made in such gardens shall succeed in the production of any article of public use, give proper premiums for the more extensive production of such, to the benefit of the trade and commerce of this kingdom.

N U M B E R XCVIII.

The Manner of Sheering Sheep in the Ardennes, a Forest in Lower Germany, betwixt Limburg and Lorraine; and of preventing many Distempers incident to them.

THE sheep of the Ardennes are every where celebrated for the exquisite delicacy of their flesh; and, from a particular secret of shearing them, their wool also is in no less esteem.

Amidst

Amidst all the accidents and distempers to which sheep are liable, seldom any of them are known to die, certain innocent remedies soon restoring them. I have observed, every where else there is a fixed season for shearing sheep; and accordingly I have seen not a few, after being shorn, shivering with the sharpness of the air; whereas, in the Ardennes, if the month of April or May be too hot or too cold, the shearing is delayed; and it is not often they set about it before the middle of summer. If, when bared, they are found to have received any wound in the shearing, it is rubbed over with a liquid pitch, and all the rest of the body well washed with wine or oil.

In some part of the Ardennes, the wine is mixed with oil-lees, or an ointment is made of wine, oil, and virgin-wax; and this precaution is said not only to thicken their wool, but also preserves them from sores and the scab. They are never sheared in the morning, it being a proverb in the country, that wool is to be sheared, as fruits designed for keeping are to be gathered, when the dew and coolness have been exhaled by the heat of the sun. If sheep are sheared when sweating, the wool, by imbibing the sweat, becomes the softer and better coloured.

Sheep are subject to a kind of distemper, which, within two or three weeks, frequently sweeps away a whole flock; but, to prevent such a fatality, the Ardennes sheep, at the beginning of the spring, have a certain potion given them.

The flock is first carefully examined; and the ailing sheep separated from the sound; an excellent method! yet is the Ardennes the only place where I ever saw it practised: after this, the juice of wild sage and hore-hound, well cleansed, is mixed in their drink, and this continued for a fortnight successively. In autumn this medicament is repeated; and those which are sick likewise go through the same course during a fortnight, and generally with a very happy effect.

Upon being seized with the scab, which the negligence of the shepherds does but too often occasion, an ointment

is prepared for them of the juice of any kind of sage, mixed up to a consistency with pulverised cerufs and fresh butter : with this the sheep are rubbed, and, three days after, washed with the urine of a she-ass, which cures them.

If the excessive heats have so affected them, that they grow sickly and faint, and even to a total loss of appetite, the juice of wild beets is mixed in their drink, and endeavours are used that they should eat them, which if they can be brought to, they are the sooner upon their legs ; but if any asthmatic symptoms appear in the sheep, the tip of their ears is cut off, after which the paunch of a sheep being thoroughly boiled in wine, a spoonful of the liquor is given to every sheep ; and this never fails, in a very little time, to set them to rights.

The cough is so common a disorder among sheep, that one seldom passes near a flock without hearing it in several : yet in the Ardennes it is otherwise ; for upon their first coughing, a radical cure is wrought by syringing, during six or eight days, up the sheep's nostrils, blanched almonds pounded in wine.

It sometimes happens that sheep feed in pastures intermixed with noxious herbs, which not seldom occasion their belly to swell ; and this, without a speedy remedy, proves fatal ; but, upon the first appearance of it, they are bled in the lip, and a spoonful of man's urine administered to them, which makes a perfect cure.

If along with the grass they have eat any worms or leeches, olive-oil, mixed with warm vinegar, is poured down their throats : this not only cures them of the present evil, but preserves them from several other accidents.

An abscess, or imposthume, in the sheep, is cut, and salt, well pulverized and burnt with liquid pitch, strewed over the incisions.

In order to make the sheep good nurses, so that they may be able plentifully to suckle two lambs, all they do is to bind dittany (in some places called pepper-wort) and trefoil to their bellies.

Upon

Upon the lambs being sick, a few ivy-leaves are given them to eat, which, after a week, so well restore them, that they suck very vigorously.

All these remedies are innocent and tried; and I was the rather induced to make them public, as they are of use, and not generally known*.

L. M.

NUMBER XCIX.

A Botanical Account of the several Grasses, for gathering the Seeds of which by Hand the Society for promoting Arts, &c. has advertised various Premiums.

GENTLEMEN,

I Take the liberty of thanking you, in the name of all my friends, for the Plate of Grasses which you have given to the public: it may, perhaps, be a means of inducing some curious men to make a collection of the several seeds to propagate them separately, and in this manner to secure to posterity the enjoyment of the best grasses, without mixture or alloy.

This task is not, however, so easy as may be apprehended; it is, indeed, with the bare eye, often very difficult to distinguish one genus of grass from another, especially when the flowering is past, and they begin to seed, the botanical characters being drawn from them (according to the modern system at least) when in a flowering state. If this obstacle then is not imaginary, which in fact it is not, what must be the difficulties of distinguishing the several species from each other? and, still further, how are we to know the varieties of the same

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species,

* This piece was published, about eleven years ago, in a country news-paper; but not being thereby greatly circulated, it is now recommended for insertion in our work, by a correspondent whom we would wish to oblige. E.

species, for there are varieties in grasses as well as in flowers, and would be more were they separately cultivated: of this truth every naturalist must be sensible.

I would not wish to raise objections to any desirable improvement in agriculture merely for the sake of doing it: on the contrary, I would rather strive to remove every possible obstacle to its progress.

I am firmly of opinion, that drawings of grasses will very little contribute to their improved culture, as from such drawings we are not enabled to ascertain the true genus or species. When I say drawings, I mean those of grasses in their natural size.

If we would wish absolutely and truly to ascertain the several *genera* of grasses, we must have them gathered at two several periods, namely, when they are in full flower, and when they have perfected their seed. From the grasses in flower we should take microscopic views of the parts which constitute the characters of the grass, as we may thereby be enabled to ascertain its true genus and species. But this is not enough; for the grass, which may by this means be very familiarly known to us in flower, will bear a different appearance when seeding: it will therefore be necessary to take, with a microscope, other views of its parts when seeding, as we shall thereby be made so perfectly acquainted with its form, as to know it immediately, from others which may bear some resemblance to it, with the naked eye.

I am well aware, that there are many difficulties attending this method; and that, when perfected, it will be of no immediate use to common farmers, who know nothing either of botanical characters or microscopes: it may, however, certainly be useful to them in the consequences, as I shall presently endeavour to make appear.

I would not be understood to desire, that you should, in the course of your work, give us microscopic views of grasses: this would, I presume, be not quite adapted to your plan; but I think that the society for promoting arts, &c. might, under the inspection of some of their
 botanical

botanical members, have drawings made of the several parts of good grasses, as they appear through the microscope in the two states above referred to: from these drawings, plates might be engraved, and a sufficient number of impressions taken off to deliver a set to every member who should desire it, and to every candidate for the premiums for gathering grass-seeds by hand.

One thing more would be requisite, namely, to enlarge the premium; for, as it now stands, it is not worth any gentleman's while to become a candidate, unless we could suppose him satisfied with the honour of succeeding: and as to inferior persons, such as farmers, labourers, &c. were they ever so well inclined to become candidates, very few, if any, of them are qualified to distinguish the grasses in gathering them.

The only way I know of, in which we have any chance of procuring the best grasses clean and unmixed, will be for some gentleman, properly qualified, to gather a small quantity, suppose an ounce of each species: let him cultivate these separately, by sowing them in drills, and keeping them clean weeded. The seed produced in this manner from his experiment, let him again sow in the same manner, and in the space of a few years, he will have such a quantity of cultivated, and of course improved seed, as will be really amazing; for, as most of the grasses recommended by the society are perennial, they will, when they are once sown, continue to yield crops of seed for many years.

I think the society refers the candidates for gathering grasses to Mr. Stillingfleet's Miscellaneous Tracts, and to the Third Volume of Mr. Mills's Husbandry. The world is much indebted to Mr. Stillingfleet for his very sensible observations on grasses, as well as for the delineations which he has inserted in his work; yet am I of opinion, that the candidates will find but little satisfaction by referring to his plates, which are not, in all respects, accurate: and, besides, I do not know that he has given any delineation, either of the yellow-oat grass, or the

common poa, both which I observe are inserted in the published list for which premiums are offered by the society: where then could candidates, who live in the country at a distance from the metropolis, have resorted for any knowledge of these grasses, had not you, gentlemen, obligingly given us that elegant and accurate Plate which was published with one of your pamphlets on May-Day last?

I have purposely omitted saying any thing of Mills's plate of grasses, because it is a servile, and, indeed, a very inaccurate copy of Mr. Stillingfleet's delineations; and, of course, all the disadvantages or imperfections of the last must be highly aggravated in the first. Why could not Mr. Mills have had the grasses drawn after nature? Perhaps he knew not how to distinguish the several *genera* and species: he might have been puzzled in his choice, but surely some kind botanical friend would have helped him out.

I now come to the more important part of the subject of this letter. Your Plate of Grasses, accurate, indeed, and elegant as it may be, is not yet of itself sufficient to guide the candidates to the choice of the several species. I have already declared my opinion, with respect to the expediency of having microscopic views of the parts of the grasses at two periods; but, till this can be effected, I will beg leave to offer my small assistance to the candidates who may have any future intention of claiming these premiums.

You have doubtless, gentlemen, for some time been well acquainted with Mr. Hudson's much-to-be-admired *Flora Anglica*, a work which cannot be enough read by every person who would wish to know the natural history of England.

Mr. Hudson has, with great accuracy, given us the title of each indigenous plant, according to the Linnæan system, together with its synonyms, the name it is known by amongst the native inhabitants, the places where it is met with, and the time of its flowering. Now, I cannot

not but imagine, that if I extract as much from this very accurate and ingenious naturalist, as relates to the grasses advertised by the society, and contained in your plate, it must have its use.

I shall begin them in the order in which I find them on your plate above referred to, where the first I meet with is the *yellow-oat grass*.

This grass is comprehended in the eighty-fifth genus of the *Genera Plantarum**, being under the class *Triandria Digynia* of Linnæus. The peculiar characters of the *avena* are,

. Cal. *bivulvâ, multiflorus; arista dorsali contorta.*

The *yellow-oat grass* is the sixth species recorded by Hudson, being distinguished by the epithet *flavescentis*. Its title in the modern system is,

Avena panicula lana, calycibus trifloris brevibus, flosculis omnibus aristatis.—Roy. † Lugdb. 66. Sp. pl. 80. Fl. Suec. 103. ‡

The synonyms of this grass are,

Gramen avenaceum pratense elatius, panicula flavescente, locustis parvis.—R. Syn. 407. §

Gramen avenaceum, spica sparsa flavescente, locustis parvis.—Raii. Hist. || Ox. III. 215. t. 7. f. 42.

It is found in the meadows and pastures in most parts of England, is a perennial grass, and flowers in July,

The next grass that occurs in your plate is the *crested dog's-tail*. This grass is ranked under the same class as that last mentioned, and is in the eighty-first genus. The characters

* Caroli Linnæi *Genera Plantarum*.—Lugdb. 1752, 8vo.

† Adriani Van Royen *Floræ Leidenensis Prodrömus*.—Lugdb. 1740, 8vo.

‡ Caroli Linnæi *Species Plantarum*. Holmiæ, 1753. Ejusdem *Flora Suecica*. Ed. I. Lugdb. 1745. II. Stockh. 1755, 8vo.

§ Joannis Raii *Synopsis Methodica Stirpium Britannicarum*. Ed. I. 1690. II. 1696. III. Lond. 1724, 8vo.

|| *Historia Plantarum, Oxoniensis*. 3. Oxon, 1680. Roberti Merisöni et Jacobi Bobarti.

characters peculiar to the cynosurus are, *Cal. bivalvis, multiflorus*; Recept. *unilaterale*. The kind of dog's-tail grass now under our consideration, is the first species of Hudson, having the epithet *cristatus*. Linnæus calls it,

Cynosurus bracteis pinnatifidis.—Sp. pl. 72. Fl. Suec. 88. The synonyms of this grass are,

Gramen cristatum.—Bauh. Hist. II. * 468. Ger. Em. † 29. R. Syn. 398.

Gramen cristatum Anglicum.—Park. † 1159.

Gramen pratense cristatum, 1. *Gramen spica cristata læve*.—Bauh. Pin. § 3. th. 43.

There is also a variety of this grass, called

Gramen cristatum quadratum. s. *Quatuor cristatum glumarum versibus*.—R. Syn. 399.

The crested dog's-tail grass is found in meadows and pastures, is perennial, and flowers in August.

The *vernal*, or *spring grass*, we find in the class *Diandria Digynia*. The characters peculiar to the anthoxanthum, or fortieth genus, are,

Cal. Gluma bivalvis, uniflora. Cor. *Gluma bivalvis, acuminata*. Sem. *unicum*. There is only one species mentioned by Hudson, to which the epithet *odoratum* is affixed. The modern name of the vernal-grass is,

Anthoxanthum spica oblonga ovata, flosculis subpedunculatis arista longioribus.—Sp. pl. 28. Fl. Suec. 33. Its synonyms are,

Gramen vernum spica brevi laxa.—R. Syn. 389.

Gramen pratense spica flavescente.—Bauh. Pin. 3. th. 44.

Gramen anthoxanthum spicatum.—Bauh. Hist. II. 466.

Gramen alopecurum vernum pratense, spica flavescente.—Hist. Ox. III. p. 193. f. 8. t. 7. f. 25.

This

* Joannis Bauhini Historia Plantarum Universalis. 3. Ebrod. 1650, fol.

† Joannis Gerardi Historia Plantarum a Thoma Johnson Emaculata. Lond. 1633, et 1636, fol.

‡ Joannis Parkinsoni Theatrum Botanicum. Lond. 1640, fol.

§ Caspari Bauhini Pinax et Prodrum Theatri Botanici. Basil, 1671, 4to.

This grass is found plentifully in the good meadows and pastures, is perennial, and flowers in May.

We come now to the *fescue-grasses*, which are comprehended in the class *Triandria Digynia*, and in the eighty-second genus. The distinct characters of the *festuca* are,

Cal. *bivulvis, spicula oblonga, teretiuscula, glumis acuminatis.*

The *sheep's-fescue, festuca ovina*, is Hudson's first species, and is called, in the modern system,

Festuca panicula secunda coarctata aristata, culmo tetragono nudiusculo, foliis setaceis.—Fl. Suec. 91. Sp. pl. 73. Its synonyms are,

Poa spiculis ovato angustis aristato-acuminatis.—Fl. Lapp. *

Gramen capillaceum, locustellis pennatis non aristatis.—Pluk. Ph. t. 34. f. 2. † R. Syn. 410.

Gramen loliaceum, foliis brevibus junceis, minus.—Hist. Ox. III. 182. t. 3. fol. 13.

Gramen foliis junceis brevibus majus, radice nigra.—Bauh. Pin. 5. Sch. Agri. ‡ 276.

This grass is found in dry pastures, is perennial, and flowers in June and July.

The *meadow-fescue, festuca pratensis*, is Hudson's sixth species.

It is called by him,

Festuca panicula erecta, spiculis linearibus muticis, foliis planis. Its synonym,

Gramen paniculatum elatius, spicis longis muticis et squamosis.—R. Syn. 411.

It is found in meadows and pastures, is perennial, and flowers in June and July.

I must beg leave to say a few words, before I proceed any further with describing the grasses.

I was

* Caroli Linnæi Flora Lapponica. Amst. 1737, 8vo.

† Leonardi Pluknetii Almagestum Botanicum et Phytographia. Lond. fol. diverso tempore edita.

‡ Joannis Jacobi Scheuchzeri Agrostographia, five Graminum Juncorum Cyperorum Cyperoidum iisque affinium Historia. Tiguri. 1719, 4to.

I was always inclined to imagine, that the meadow-fescue, advertised by the society, was the purple fescue of Stillingfleet, particularly as I found no such grass as the meadow-fescue mentioned by the last-mentioned writer; and, if I mistake not, Ray mentions only one of these grasses. I submit, however, to the opinion of so able a botanist as Mr. Hudson, who has, doubtless, examined the parts with greater accuracy than I have done.

Yet, after all, he says, that the purple-fescue is found in dry pastures: if so, how came it to be called *gramen Alpinum pratense*, &c.? See Hudson, page 36.

Notwithstanding what I have said, I must acknowledge, that there is so great a resemblance betwixt some of the species of fescue-grass, that it is very easy to confound them.

As I am upon the subject of fescue-grasses, I must not omit mentioning the fote-fescue, represented in Plate I. of this Volume. This is the *festuca fluitans*, and is the ninth species of Hudson. Its name, in the modern system, is,

Festuca panicula ramosa erecta, spiculis subsessilibus teretibus muticis.—Fl. Suec. 95. Sp. pl. 75. Its synonyms are,

Gramen aquaticum cum longissima panicula.—Bauh. Hist. II. 490. R. Syn. 412.

Gramen fluviatile.—Ger. Em. 14. Park. 1275.

Gramen aquaticum fluitans, multiplici spica.—Bauh. Pin. 2.

It is found in ditches and in watery places, is perennial, and flowers in June and July.

The great poa, or meadow-grass, *poa pratensis*, is comprehended in the same class. The peculiar characters of the poa, which is the seventy-seventh genus, are,

Cal. bivalvis, multiflorus. Spicula ovata: valvulis ovato-acuminatis.

The great meadow-grass, which is Hudson's third species, is, in the modern system, called

Poa panicula diffusa, spiculis quinquefloris, glabris culmo erecto tereti.—Fl. Suec. 82. Sp. pl. 67. Its synonyms are,

Gramen pratense paniculatum majus latiore folio, poa Theophrasti.—Bauh. Pin. 2. th. * 28. R. Syn. 409.

Gramen pratense.—Ger. Em. 2. *vulgatius*. Park. 1156.

It is frequently found in the meadows and pastures about Mary-le-bon, and in other places, is perennial, and flowers in June and July.

The *common poa*, or *meadow-grass*, *poa trivialis*, is Hudson's second species, being by Linnæus called

Poa panicula diffusa, spiculis subtrifloris basi pubescentibus, culmo erecto tereti.—Syst. Nat. 874. Sp. pl. 67. Its synonyms are,

Gramen pratense paniculatum medium.—Bauh. Pin. 2. R. Syn. 409.

Gramen pratense minus.—Bauh. Hist. II. 542. Park. 1156. Ger. Em. 2.

It is found in the meadows and pastures, is perennial, and flowers from May to July.

The *annual poa*, or *meadow-grass*, or *Suffolk grass*, *poa annua*, is Hudson's eighth species, being, in the modern system, called

Poa panicula diffusa angulis rectis, spiculis obtusis culmo obliquo compresso.—Fl. Suec. 85. Sp. pl. 68. Dalib. Paris. 28. † Its synonyms are,

Gramen pratense minus, seu vulgatissimum.—R. Syn. 408.

Gramen pratense minimum album et rubrum.—Park. 1156. Ger. Em. 3.

Gramen pratense paniculatum minus.—Bauh. Pin. 3. th. 31.

It abounds every where in the meadows and pastures, is an annual, and flowers from April to September.

The *meadow fox-tail*, *alopecurus pratensis*, is Hudson's first species of the *alopecurus*, which is the seventy-second genus, and in the same class as those last mentioned. The characters of this genus are

Calyx *bivalvis*. Corolla *univalvis*.

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The

* Caspari Bauhini Theatrum Botanicum. Basil, 1658.

† M. Dalibardi Floræ Parisinæ Prodomus. Paris, 1750, 4to.

The modern name of the meadow fox-tail, assigned to it by Mr. Hudson, is,

Alopecurus panicula cylindrica spiciformi, culmo erecto. Its synonyms are,

Alopecurus culmo spicato erecto.—Roy. Lugdb. 5. Fl. Succ. 59. Sp. pl. 60.

Gramen alopecuroides majus.—Ger. Em. 10.

Gramen phalaroides spica molli, fve Germanicum.—Bauh. Pin. 4.

Gramen phalaroides majus, fve Italicum.—Bauh. Pin. 4. Park. 1164.

This grass is commonly met with in the meadows and pastures; is perennial, and flowers in May.

The *fine-bent-grass*, *agrostis capillaris*, remains yet to be noticed. The *agrostis* is in the same class, being the seventy-fourth genus. Its peculiar characters are,

Cal. *bivalvis, uniflorus, corolla paulo minor.* Stigmata *longitudinaliter bispida.* The modern name of the fine-bent-grass, which is the sixth species of Hudson's *agrostis*, is,

Agrostis panicula capillari patente, calycibus subulatis æqualibus hispidiusculis coloratis flosculis muticis.—Roy. Lugdb. 59. Dalib. Paris. 23. Sp. pl. 62. Its synonyms are,

Gramen montanum panicula spadicea delicatiore.—Bauh. P. 3.

Gramen miliaceum locustis minimis, panicula fere arundinacea.—R. meth. em. * 177. Syn. 492.

Gramen pratense vulgare panicula fere arundinacea.—Bauh. Hist. II. 461.

It abounds in meadows and pastures, is perennial, and flowers in August.

I hope, gentlemen, the above account of the grasses, for which the society has advertised premiums, may be of some service to such gentlemen as may intend to gather the seeds, in order to promote their being separately cultivated.

The

* Joannis Raii Methodus Plantarum emendata et aucta. Lond. 1703, 8vo.

The farmers who purchase your work will, I know, exclaim against so much Latin, which, indeed, I do not myself in general approve of in such a collection: but in this particular case it was unavoidable; and to have given the translations, would have been of very little use, as most botanists, I believe, understand Latin: and, besides, this letter, which, but for the importance of the subject, would perhaps, as it is, be thought too long, would have been greatly encreased, by such translation, in bulk.

I would, gentlemen, recommend the perusal of Mr. Hudson's *Flora Anglica* to your very sensible correspondent the Rev. Mr. Comber, who appears, by his letters, to have a taste for botany. Should he peruse this valuable octavo volume, I have reason to think he will be perfectly satisfied with the intelligence he cannot but by that means acquire.

Some, even of your more enlightened correspondents, are not, I know, fond of botany: let such pass over this letter without reading it. I am perfectly well satisfied of the rectitude of my intentions, in recommending it to the notice of your learned readers. I mean to be instrumental in introducing a very capital improvement into the English husbandry; and such an attempt cannot but be laudable, though it should not succeed.

A word or two more, and I have done.

Could not the society have found some other sorts of grasses, which would have been, at least, as proper for cultivation as those advertised? If such could have been found, of which opinion I acknowledge myself to be, would it not have been better if more grasses had been advertised? There would then have been a greater variety, and the greater the variety, the better should we have been enabled to prefer the most valuable when they came to be cultivated.

I am, GENTLEMEN,

London,
May 30, 1765.

Your very humble servant,
CLERICUS.

NUMBER C.

*Considerations on Burnet, with some Experiments relative thereto;
and Reflections on the Value of Green Winter-Fodder.*

GENTLEMEN,

IT is no wonder that so much should be *said* and *wrote* about burnet; because, if it answers the account of its patrons, its cultivation is a matter of great benefit to the public; and if it does not, it is pity the public should be imposed upon by interested persons, especially as a discovery of such imposture in one instance will check the spirit of attention to improvements in agriculture in general, which seems to distinguish *Englishmen* so happily when just tasting the first fruits of peace.

For this reason, I must, gentlemen, repeat my request, that *Rusticus* will favour the public with the reasons of his assertion, that the culture of burnet will enrich Mr. *Rocque* more than all his customers.

In the mean time, I apprehend I shall contribute something towards settling a just notion of the value of this plant, (agreeably to my impartiality in search after truth in agriculture and every other subject) by considering some experiments relative to burnet.

Your correspondent *A. B.* in Numb. XII. of your present Volume, informs you, that the Lord Chancellor has set aside an acre of land at the *Grange*, in which to cultivate burnet according to Mr. *Rocque's* method; and the writer assures us, that all due care will be taken in the cultivation. I am very glad, gentlemen, that this worthy nobleman interests himself so much in the improvement of agriculture. I hope his example will be followed by many persons of his own rank; and that the result of his experiments will be of advantage to the nation. In the mean time, I would only observe, that if this experiment be conducted with ever so much care, and his lordship be imposed

imposed upon by his servants in no one step, yet it can only be regarded as a single experiment; and the great point to be known is, how this plant succeeds in different experiments in *different* soils.

I suppose no suspicion would have been entertained of the truth of Mr. *Roque's* experiments, had he not appeared to have a considerable interest in the commendation which he gives to burnet: but since he is considered as an *interested*, and therefore *unfair* witness, we must suspend our judgments till the experience of others, disinterested persons, teach us how to form them.

I am, however, able to inform you of one experiment, which promises well in favour of this plant. — *Coats, of Garton* upon our *Yorkshire* wolds, Esq; finding, by your *Museum*, that I was disappointed of the burnet-seeds expected from Mr. *Lancaster*, very obligingly sent a servant to me with a present of some in a paper. I took the opportunity of enquiring of the servant what his master had done, by way of experiment, in relation to the grass. He informed me, that about *Candlemas*, in the last year, his master ordered his servants to dig a small close, somewhat less than an acre, two spits deep, so that the swarth turned down might rot.

The soil was such as the wolds land usually is.

He designed to have sown this field with burnet-seed very early in the spring; but Mr. *Roque* had no seed to supply him with: he was therefore obliged to wait till Mr. *Roque's* summer-seed was reaped; and about *August* sowed his field as nearly in the proportion and manner prescribed by Mr. *Roque* as he could. The plants, he said, came up finely, and were in high vigour when he spoke to me, about a month ago.

I must add, gentlemen, that the transplanted burnet-plants, which I received from Mr. *Lancaster*, continue very fresh and green, especially in the lower branches, though the frost has lately been so keen as to destroy several things in my garden, some of which I thought out of danger of its force.

Your correspondent *P. H.* informs the public of something, however, which seems very unfavourable to the culture of this boasted plant. He says, that about *Southam* in *Warwickshire*, great quantities of burnet grow; that the land on which it grows, is of the lowest quality; and that the keeping long green, and appearing early so, is owing to its pungent oil, which causes no cattle to be fond of its hay, insomuch that they seem to prefer straw to it; and that the officers will not let the soldier's horses eat of it; and that it makes cattle lousy.

Now, in the first place, *P. H.* should be well assured, that the burnet which he describes, is that cultivated by *Mr. Rocque*; because, if it is not, he is guilty of impeding an improvement which may be of great benefit to the public: and I am inclinable to think that your correspondent is mistaken in his plant; for he describes the burnet only as keeping green long, and *springing early*; whereas *Mr. Rocque's* burnet certainly keeps green through the whole winter. Much wild burnet grows in this neighbourhood, upon such land as *P. H.* describes; and probably he means the common wild burnet, which is *certainly* very different from *Mr. Rocque's*. But, secondly, if *P. H.* be not mistaken in the plant, the objections made to *burnet hay*, however just, are no good objections to the grass when green; for many plants when dried, though most carefully, are so different from themselves when green, that they seem not the same plant; for instance, balm.

I must, however, gentlemen, totally dissent from your correspondent *P. H.* in his conclusion, *viz.* that we should disregard a provision of green fodder for winter, because improvements of artificial grasses are introduced from *France* and *Switzerland*, where winter-fodder is hardly to be had at all. Let the causes why winter-fodder is hardly to be had at all in those countries, be what they will, it will always be prudence to secure green fodder, if we can in winter, here; because, First, crops of hay often fail; — Secondly, hay is made in a very throng season, at

a great expence;—Thirdly, many incidents spoil hay in the making and stacking; and *dry* fodder is, on many accounts, not so good as *green* for horses and cattle of many sorts.

I am, GENTLEMEN,

Your humble servant,

East-Newton,

THO. COMBER, jun.

February 25, 1765.

N U M B E R C I.

An Account of two Letters which passed betwixt Mr. Comber and Mr. Perfect, relative to Timothy-Grass, with Observations thereon.

GENTLEMEN,

I Am always desirous of going to the bottom of every question; and therefore, as soon as ever I had dismissed my last letter to you, (see Numb. LXVIII. of this Volume) I recollected I had heard that Mr. *Perfect*, a very justly-famous gardener, had cultivated timothy-grass, and wrote to desire his sentiments thereon.

This gentleman is the *Rocque* and *Miller* of the north; and his gardens at *Pontesfract*, about a mile from the great road betwixt *London* and *York*, are a noble collection of every thing useful and curious in the store-house of the gardener, the nursery-man, and seedsman.

I have, gentlemen, ventured to communicate to you his letter without asking his consent; because I thought I might spare him the trouble of being asked, and giving his consent, as the letter cannot fail to do him credit.

It is wrote in the stile of a gentleman and a scholar, of one who loves improvements in agriculture, &c. and is no niggard of his knowledge. I shall think myself happy, if, by this publication, I make more known a character so respectable: and I cannot help observing, that as trees thrive better when transplanted from an hardier climate and
soil

soil to a *milder*, it must be highly prudent for the gentlemen of the south to have their plants from such a northern garden as Mr. *Perfett's*.

The observations I would make on Mr. *Perfett's* very obliging answer, are, I. This gentleman stands the fairest chance to give a *just* and *full* account of the culture of this grass; for he has cultivated it in three kinds of soil so different, that they seem to comprise, in a general manner of speaking, all soils, *viz.* the *dry* and *barren*, the *very good*, *warm*, and *dry*, and the *strong wet* soil.

2. The effects of culture of the timothy-grass in the three different soils are somewhat different from what one would have expected from all prior accounts; for though one might have expected it to flourish extremely well in the third kind of soil, and hardly at all in the first, yet one would have expected that it should have thrived *very well* in *very good*, *warm*, and *dry* soils, which Mr. *Perfett* assures us it *did not*, but thrived *pretty well* only.

3. This fact seems a good foundation for Mr. *Perfett's* assertion, that the *timothy-grass* deserves not the encomiums given it.

4. If the successful culture of the *timothy-grass* be confined to the low-lands, the assertion of one of your correspondents, that this grass is most proper in general to lay down grounds withal, must admit of great deductions from the account.

5. Mr. *Perfett* is clear, that the species recommended for culture is the "*gramen typhinum majus, seu primum*;" and therefore, if any gentleman be inclined to gather the seed, and cultivate the grass by this means, he must be very cautious that he does not mistake the "*gramen typhinum minus, seu vulgare*," which, as it is a *smaller* and *more common* kind, cannot be supposed to bear nearly so great a burthen.

6. Mr. *Perfett* observes, that cattle are very fond of this grass whilst young; but that, if it stands very long, it will make an hay as coarse as rye-straw, yet a good and juicy hay if cut early. Hence it appears that this grass
may

may be so used, as to be both excellent *green* and *dry* fodder.

7. Mr. *Perfett's* account that this grass, though manured in autumn, is not forwarder than the natural grass, seems surprising; and one wishes to know on which kind of soil this manure was bestowed. If it was laid on a dry soil, it is not surprising that the manure should not advance the growth of a grass which appears to delight in moisture.

8. Nothing can be more sensible than Mr. *Perfett's* remark, that grasses sown separate bear the greatest burthens of hay, because they ripen, and are consequently fit to cut, at the same time; and for a like reason, mixtures may be fittest for pastures, because the succession of grasses will supply the place which the cattle have first eat down. I am, GENTLEMEN,

Your humble servant,

April 15, 1765.

THO. COMBER, jun.

N U M B E R C II.

A Letter from the Rev. Mr. Comber to Mr. Perfett, of Pontefract, in Yorkshire.

S I R,

HAVING heard the Rev. Mr. *Marsden* (our archbishop's chaplain) say, at the *Malton* visitation, in *June* last, that you then cultivated the *timothy-grass*, though I have since heard and read a good deal about it, I apply to your experience for an account of it, which I desire you will favour me with in as particular a manner as your conveniency will allow.

In the mean time I must observe, that after all that has been said about this now-celebrated grass in the extremes, viz. that "'tis the *most excellent* grass in *England*," and that "'tis a rank weed," probably you will tell me, that it is neither one nor the other.

However, I desire, Sir, to be informed by your experience in two points particularly, viz. First, whether this grass succeeds any thing nearly as well in *dry up-lands* as in *wet low-lands*? If it does, it is a surprising circum-

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stance,

stance, as few vegetables thrive with an abundance of water, and yet almost as well without any: and, Secondly, what is its most proper culture, as to tilth, quantity of seed, &c.?

It seems agreed, that the *timothy-grass* is a species of the *cat's-tail grass*; but not so clearly what species.

I presume, Sir, that you are a *speculative*, as well as a *practical*, gardener, and therefore ask you, whether you think the *timothy-grass* the "*gramen typhinum maximum*," or the "*gramen typhinum* (or *typhoides*) *vulgatissimum*."*

The readiness with which the seed is already dispersed over various parts of the kingdom, seems to indicate it to be the latter; and yet the account which Mr. *Rocque* gives of a plant brought by Lord *Robert Manners* from *Lincolnshire*, seems to agree with the great length of the former.

Let me add, that the circumstance of the plant's growing in a stone quarry, seems clearly to prove, that this grass thrives best in the *driest situation*.

I shall be obliged to you for your sentiments by the post; and still further, if you could send me by the carrier a small specimen of the *seed* and *plant*.

I passed through *Pontefract* in *June* last, soon after I heard the account above mentioned from Mr. *Marsden*, and was much disappointed of my hope of seeing your gardens, said to be one of the finest store-houses of Nature's vegetables, not only in the north, but in *England*, or even *Europe*, by almost continual showers, which made walking with safety impossible. I am, SIR,

Your humble servant,

March 26, 1765.

THO. COMBER, jun.

* On consulting the ingenious Mr. Hudson's *Flora Anglica*, we find the *phleum*, cat's-tail grass, is the seventy-first genus, and in the class *Triandria Digynia*. The characters of this genus are, Cal. *bivalvis*, *linearis truncatus*, *apice bicuspidato*. Cor. *inclusa*. There are three species, the first of which we take to be the timothy-grass, or *phleum pratense*, the meadow cat's-tail. Mr. Hudson calls it *phleum spica cylindrica longissima*; *glumis ciliatis*: and, to pursue the method of our good correspondent Clericus, its synonyms are, *phleum spica cylindrica longissima*. — Fl. Lapp. 26. Fl. Suec. 50. Sp. pl. 54. *Gramen typhoides maximum spica longissima*. — Bauh. Pin. 4. th. 49. Hist. Ox. III.

NUMBER CIII.

Mr. Perfect's Answer to Mr. Comber.

REV. SIR,

I Am favoured with yours, and in answer thereto, I have cultivated the timothy-grass, in three different soils, viz. in dry barren ground, where it does not thrive at all; and in very good, warm, dry soil, in which it does pretty well; but what I sowed in a strong wet soil flourished extremely well, and produced a great burthen last summer. You may depend on it being the "*gramen typhinum majus, seu primum*."—Ray's Synopsis, page 398. and grows plentifully in all the low meadows and hedges about this town: it is an early grass, and, I think, will suit a moist soil, consequently may be very useful to sow in low wet grounds, as cattle are very fond of it whilst young; but it makes a very coarse hay, if it is not cut early and in full virtue: if it stands too long, it is as coarse as rye-straw.

I do not think it deserves the encomiums that are given it by Mr. Rocque and others.

I had about twenty yards square of it, which I let stand for seed last summer, after which I manured it in autumn; but it is now no forwarder than the other natural grass which joins it. I will send you a little seed, and a few roots, to-morrow, by Mr. Jackson's waggon, to York, packed up in a little box, directed for you, at Thomas Comber's, Esq; at East-Newton, near Malton.

The seed mine was produced from I received from abroad, and am assured it is only the great cat-tail grass.

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188. t. 4. f. 1. *Gramen typhinum majus, seu primum*.—Ger. Em. 11. R. Syn. 398. Mr. Hudson then adds, as a synonym, *Gramen typhinum medium s. vulgatissimum*.—Park. 1170. and mentions, as a variety of this species, *Gramen typhinum minus*.—Ger. Em. 11. Park. 1170; so that he concludes them all to be of the same species. He observes that it flowers in July, and is met with in meadows and pastures.

I am inclined to believe, that we have much better grasses in England than it, if they were collected separate, and adapted to suitable soils for each: though a mixture may be best for pastures, yet the greatest burthens of hay will arise from each species separately cultivated.

For instance, saintfoin, clover, trefoil, lucerne, and rye-grass, produce great burthens separate; but when mixed with other natural grass, they ripen at different times, and some are withered before others are fit to cut,

I am, REVEREND SIR,

Pontefract, Your most obedient servant,

March 31, 1765,

WILLIAM PERFECT,

P. S. The timothy-grass seed being very small, I think about five pounds would be sufficient to sow a statute-acre,

N U M B E R C I V.

Strictures on some Objections against Mowing of Wheat, with an Account of the Writer's turning his Thoughts to Agriculture.

GENTLEMEN,

I Really thought long ago, and even said in print, that I supposed I should have no more occasion to write in defence of mowing of wheat. I have since had occasion to observe the unfair means used by the enemies of this practice; means sufficient to give any candid man a prejudice against the cause in behalf of which they are used, as that which needs them must be thought bad indeed.

The *Old-Fashioned Farmer's* first, second, and third paragraphs of his letter marked No. LXXV. in Vol. III. have not even the appearance of any thing against the practice of mowing of wheat. The sense of his fifth long paragraph is only this, "Wheat cut short with the sickle" is often fit to carry the day after; but wheat mowed low "with weeds must stand out many more days; consequently the harvest is lengthened, and the crop "hazarded." Now this has been answered long since. It has been shewn incontrovertibly, that wheat cannot stand

stand till fully ripe, without prodigious loss in any manner of cutting; and good husbandmen have few or no weeds; accordingly the woldsmen find that they can house their mown wheat *as soon* and *as safely* as their sickled wheat. But if there be weeds, it is well worth the while to employ some woman or boy to pull them out before binding.

His sixth paragraph only tells us, that “the straw of mown wheat is one third longer, consequently takes one third more *time* and *trouble* in carrying and threshing, and requires one third more *room*.” I answer, The countryman’s draught in harvest has nothing to do but attend the carriage of his corn; and, if he manages well, he may contrive so as to keep it *constantly employed*, and yet *not hurried*, in following his reapers. Besides, the stubble left must be carried home for some use or other, as this correspondent of yours owns; and the season which follows harvest is always a very throng one, *viz.* seed-time; so that if the stubble is to be *inneed at all*, as he owns, before it be spoiled by bad weather, it must hurry the farmer vastly. It is well known, that corn keeps best in stacks to be taken in as wanted; so that the article of room deserves no consideration. And no body can help smiling to hear him tell us, that the corn will take a third part more threshing, because the straw is one third longer. Does not a child of seven years old know that the thresher only strikes the heads, not the tails? Besides, he should have remembered, that the expence of mowing the stubble will be nearly as much as that of mowing of the corn, and makes a considerable difference in the comparative expences of the two methods.

This correspondent calls the *time* saved by mowing of wheat, which is lost by sickling of it with the same number of hands, *trifling*, in his fifth paragraph. I have shewn you, gentlemen, that the saving of time is *really prodigious*.

But this writer is so determined to *war with common opinion*, that, in the eighth paragraph, he tells us, that “Wheat-stubble is *much better* to thatch withal than
“wheat-

“wheat-straw, because it has no ears to grow, and is not
 “bruised by the flail, shoots off water better, and lasts
 “longer.”

Is it necessary to tell him, that good threshing secures against ears which will grow? Needs he be told, that the *ears* only are threshed, therefore they only are bruised; and that, when the wisps are made, these are turned inwards, and, if they were not, would be cut off in the dressing of the coat? On the contrary, stubble, let it stand ever so little after harvest, will be trod down and bruised considerably: the rains which fall into the hollow stubble, will rot and destroy it amazingly, insomuch that scarce any prudent man, who can cut *heath*, would take the *best stubble*, thus spoiled, if cut to his hands, to thatch withal. The goodness of straw for thatching is estimated so much in proportion to its length, which makes it *bed finer* and *firmer*, that the price is well known to rise considerably in proportion with it; and a sensible correspondent of yours, who signs himself *A Wiltshire Farmer*, has wrote you a letter, marked Numb. LVIII. in your Third Volume, to shew the great advantages of saving straw, *when long*, for thatching.

The *Old-Fashioned Farmer*, in the ninth paragraph, supposes, that his stubble will, however, make litter; and so it will, and hardly any thing else. But what comparison betwixt the value of this stubble for litter, and what it might have been, had it been preserved dry for thatching and fodder?

This writer, gentlemen, in the tenth paragraph, totally *mistakes the question*; for, instead of shewing that it is prudent to employ many more hands, and give *much greater* wages, than is *needful*, he sets about shewing that it is prudent to give *great wages* and *good liquor* when they are *needful*. The wolds-men give *great wages* and plenty of good liquor to labourers who come out of other places, and are prudent in so doing, and profit by it. But what would any sensible man think of them, if, instead of thus getting their harvest *quickly*, and *cheaply on the whole*, they should hire people to cut down their corn with the sickle,

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at an expence immensely greater, and want so many hands that they must encourage people to come with sickles as far northwards as *Carlisle* is from *Cambridgeshire*? He would think them mad.

What this correspondent says therefore of the *Shropshire*, *Staffordshire*, and *Cheshire* men going to *Warwickshire*, and the men of that county going to *Cambridgeshire*, is nothing at all to the purpose: only I must observe, that he reckons *Cambridgeshire* among the forward counties. But when I met the *Carlisle* men returning from this last-named county, all the corn of this neighbourhood was housed. How backward then must the counties be, which can afford to send their men to *Cambridgeshire*, and have them back timely for their own harvests?

This same gentleman has (for what reason cannot well be guessed) opposed my account of the abuses of gleaning.

He tells us, gentlemen, that he and his neighbours let both *wives* and *children* glean after their *husbands* and *parents*, and *seldom* find themselves at *all* injured. If I was inclined to think him a scholar, I should suppose that he designed to defend himself by the axiom, "*Volenti non fit injuria*." But, notwithstanding his out-of-the-way fancy, the public is *shamefully* injured by having so many useful hands, as the mothers who glean might be, taken from harvest-work by this foolish indulgence.

This writer, gentlemen, declares, he *cannot guess* how I have arrived at such a pitch of *experimental* knowledge, as to think myself able to direct farmers in the management of their business. This was a very easy matter to guess, *viz.* that I came at my knowledge, as the rest of your correspondents do, by observing experiments of others, reasoning upon them, and making some myself.

He has no right, I think, gentlemen, to the civility of a more particular account: but to you I will give the detail.

I had always a strong admiration of the works of *Nature*; and during my education at *Cambridge* I applied myself with assiduity to the several parts of natural philosophy,

lophony, but with peculiar affection to *mechanics*, *hydrostatics*, and *pneumatics*.

When I had taken my degree in arts, I retired to this place (it will be twenty years ago next month); and partly from a natural inclination, partly by the advice of my physical friends, to prevent the threatened effects of too intense application to books, I walked and rode out much, and studied the *phenomena* of Nature, and particularly the various operations of agriculture; attended to the several methods of practice, conversed with all the sensible farmers I could meet with, asked their reasons, explained my own for alterations in their practice, and managed myself both arable, meadow, and pasture ground; bred horses, and fed cattle; and, in short, took every reasonable method to find *truth*, *useful truth*, on every important point of agriculture. If the Old-Fashioned Farmer has taken as much pains, all that I can say is, that he has been, in my opinion, *very unfortunate*.

I am, GENTLEMEN,

Your humble servant,

THO. COMBER. jun.

P. S. Though there is little or nothing more in the objections of your correspondent *J. L.* (see Vol. III. Numb. LXXVI.) against mowing of wheat, than in those of the *Old-Fashioned Farmer*, which are answered above; yet, as they are expressed in somewhat a different manner, and may by some be thought *new*, I will take some notice of them.

This writer seems to confound *mowing in swarth*, or *mowing outwards*, as oats are mowed, with mowing inwards, as wheat is advised to be mown. He supposes, that the *gatherer*, who follows the *mower*, should have a quick and good hand to lay the wheat in tolerable order for binding, in order to get out of the way of the next mower: and such a *quick* and *good* hand the *gatherers* on the wolds have. But then this is not mowing in *swarth*; for there no gatherer is hurried by the following mower.

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He says "*children cannot do this work ;*" and I agree with him. But when he adds, that "*women fit for it, may be more advantageously employed in reaping,*" he asserts what is most clearly contradicted by fact; as I have shewn how much more advantageously women *gather after mowers*, than reap with a sickle.

He is also sadly mistaken when he supposes that a *short* blade is better than a *long* one: for as I have shewn that the mowers on the wolds * use a *long grass-scythe* with sufficient dexterity, a *short* scythe is just so much *worse* as it is *shorter*.

As to his objection about *rain*, corn cut with the sickle is just as much exposed as that cut with the scythe. The wolds farmers never let their wheat lie *unbound*.

He retails the old stale objection of more *carriage, room, and threshing*, in mown than *sickled* corn; only he has the *moderation* to make the difference only one fifth, instead of the *Old-Fashioned Farmer's* one third, that is almost *double*.

I have shewn above, that nothing is saved by having the stubble to carry home after harvest, but much lost in the expence of taking up the stubble, and having it exposed to rain, &c. His pretence that stubble is *best* for thatching, is so utterly destitute of all probability, that one would almost think this writer could hardly have fallen on the same pretence with the *Old-Fashioned Farmer without concert*.

As to his mention of slovenliness of leaving stubble to be *ploughed in*, I have so fully shewn, both by *reasoning*, and on the best authority, that stubble is a *most excellent manure*, that this idle pretence is truly *crambe millies recocta*.

As to the weeds, if they will not *shake out*, as *J. L.* says, they must be *pulled out*; but good husbandmen will have *few or none* of them. As to melilot, it is indeed nauseous, but not to be avoided by reaping the corn with a sickle; for the corn in some fields of this neighbourhood, in which all the corn is reaped with a sickle, is spoiled by it: and, if I guess well, this writer, who seems well

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acquainted

* Are the crops on the wolds heavy or thin? and how many quarters of wheat *per statute acre* may they commonly grow throughout a whole farm? E. T.

acquainted with *melilot*, seems to know nothing at all about mowing of wheat.

One of your correspondents, who signs himself *S. L.* and has given you an account of a machine for tearing up stubble, is very angry with those who are advocates for ploughing-in of stubble. "How they can defend such a practice, I am at a *loss* to *imagine*; they are, perhaps, "infatuated by *custom*? it *blinds* them to their *interest*, and "they will not even *wish* to *edify* by the *reiterated experience* of others." Yet all on a sudden he calms, and only tells us, that he *doubts* whether *stubble* when ploughed in be a *good manure*. You had owned it to be so, when the soil is strong, that is, a soil proper for wheat; and *Monsr. Chateauvieux's* experiments had proved it *indisputably* so; but *S. L.* is so furious a creature, that you are forced to muzzle him, and curtail his letter of a long paragraph, containing such expressions, relative to one correspondent, whom you stile *valuable*, that you could by no means consent to insert it.

Errata. Instead of "oats with my barley," Vol. III. page 363. line 23. read "oats with my lucerne."—and page 30. line 8. of this Fourth Volume, for "modern," read "moderns."

NUMBER CV.

Of the Encouragement to Agriculture, arising from the Possession of a paternal Inheritance.

GENTLEMEN,

I Never had a great memory for words, and I have not at present the key of my study-door; so I can only say, that I think I remember the *natural Horace* to celebrate more than once the happiness of him who "*paterna arat jugera.*"

Surely sound *philosophy* is perfectly at accord with this *poetic sentiment*; for reflections on the obligations we have to a parent who has transmitted to us a comfortable inheritance,

heritance, are certainly very likely to stimulate us to take at least *equal* pains to transmit it entire, and in as good condition, to our posterity : and if our parent has been a good husbandman, and left us the inheritance in a fruitful state, we have one of the strongest inducements to continue that industrious culture, *viz.* the *fear of shame*. If he was no good husbandman, we have a motive almost as strong, *viz.* Ambition ; that it may be justly said, “ This chief exceeds his father’s fame.”

If an intercourse of mutual tenderness betwixt the father and the son has been preserved, the noblest kind of inducement will actuate us, *viz.* a desire that every thing inherited may appear a monument of the *kindness* of the *parent*, and the *gratitude* of the *child*. If the ancestor and successor have lived together upon the inheritance, a much stronger motive still to good agriculture will arise hence ; for, as Mr. *Pope* rightly observes in some part of his collection of letters, “ We cannot miss even an old stump, “ with which we have long been acquainted, without “ some degree of regret.”

In the place then which we have lived in long with a parent, who affectionately loved and was loved by us, we cannot view an object which will not awake the memory of some tender scene, and make us love, and therefore cultivate to the utmost of our powers, the ground which suggests such pleasing and instructive melancholy.

Such encouragement, gentlemen, is it to agriculture, and consequently such advantage to the state, that men possess an inheritance derived from their parents, and on which themselves and parents have lived !

I know a courtier, a man of taste and letters, who, though generally confined by the nature of his employment in and about town, yet endeavours every summer to bring down his eldest son from *Westminster-school* to his country-seat, possessed and lived upon by his ancestors for several generations, “ that he may *learn to love it*,” as he expresses himself.

And surely, gentlemen, it is reasonable to suppose, that the heirs of so many antient families would not have

mortgaged, or even sold, their paternal estates to discharge debts of gaming, &c. if they had been taught to love their country-seats, by spending as much of their infancy, childhood, and youth at them, as was consistent with the scheme of a liberal education.

I read over Tully's philosophical works this spring, and was much struck by the beauty of a passage in the *second book of laws*, which I marked when I read it, in order to give you these reflections, which it suggested.

I will now transcribe the passage for the sake of your learned readers, who may not have the book at hand, or may not readily find it; and give a free translation of it for the sake of your unlearned readers.

Atticus having observed the beauty of the place they were in, a villa of *Tully's*, acknowledges, that he used to wonder that his friend was so much delighted with this rustic retirement; but now, that he has seen it, he wonders if *Tully*, when absent from *Rome*, is any where else. *Tully* answers, “*Ego verò cum licet plureis dies abesse, præsertim hoc tempore anni, et amœnitatem hanc et salubritatem sequor: rarò autem licet. Sed nimirum me alia quoque causa delestat, quæ te non attingit i'ta.*—*A. Quæ tandem ista causa est?*—*M. Quia, si verum dicimus, hæc est mea et hujus fratris mei, germana patria. Hinc enim orti stirpe antiquissimû sumus. Hic sacra, hic gens, hic majorum multa vestigia. Quid plura? Hanc vides villam, ut nunc quidem est, lautius ædificatam patris nostri studio; qui, cum esset infirmâ valetudine, hic ferè ætatem egit in literis. Sed hoc ipso in loco quum ævus viveret, et antiquo more parva esset villa, ut illa Curiana in Sabinis, me scito esse natum. Quare inest nescio quid, et latet in animo, ac sensu meo, quo me plus hic locus fortasse deleteret: siquidem etiam ille sapientissimus vir, Ithacam ut videret, immortalitatem scribitur repudiassè.*—*A. Ego verò tibi istam justam causam puto, cur huc libentiùs venias, atque hunc locum diligas. Quin ipse verè dicam, Sum illi villæ amicib modò factus, atque huic omni solo, in quo tu ortus et procreatus es: movemur enim, nescio quo pacto, locis ipsis in quibus eorum quos diligimus aut admiramur, adsunt vestigia.”*

That

That is, "I run hither both for health and delight, when I can steal any number of days, especially at this season. This is too seldom in my power. But I have another cause of delight, which does not touch you."

Atticus enquires, "Pray what can that be?" *Tully* replies, "To say the truth, this is the native place both of myself and my brother here. Our family is very ancient. I see many footsteps of our ancestors, of our family devotions, and connections. Why should I enumerate them? You see this *villa* at present more elegantly built by the care of my father, who, having bad health, fixed in learned retirement here. I was born here in my grandfather's days, when this *villa* was small, like all its ancient neighbours, like that of *Curius* in the country of the *Sabines*. Hence there is (I know not what to call it) a secret feeling of my mind, which makes this place more delightful to me; as the most wise *Ulysses* is said to have preferred *Ithaca* to immortality." *Atticus* rejoins, "I think that is a good reason for your fondness of this place. To say truth, I have more affection for this *villa* and neighbourhood on a sudden, because you was born here; for we are moved, I know not how, with places in which we see the footsteps of those whom we love and admire."

The love of places where we are born, or where they have lived whom we love and admire, is represented as a kind of *mystery* by both *Tully* and *Atticus*; but the principles of *true philosophy*, that of *Mr. Locke*, have developed this mystery, and shewn us how this love is accounted for by *association of ideas*.

I read this beautiful passage of *Tully*, as I told you, gentlemen, with design to give you my reflections upon "the encouragement to agriculture, arising from possession of a paternal inheritance." 'Tis not above six weeks since I read it; and I then little thought that before I could have an opportunity of putting my reflections on this subject on to paper, I should feel a most afflicting stroke, which would render even the perusal of this passage of *Tully* uncommonly affecting to me, and writing my
reflections

reflections thereon still more affecting. This stroke was no other than the death, the *unexpected* death, of one of the best of parents; of a father to whom I have been *almost* a constant companion for above twenty years since I finished my education, and left the university; a constant companion for much the greatest part of these twenty years, at his paternal estate, which he enjoyed in the fifteenth generation from his ancestor Sir *John de Newton*.

You have judiciously admitted the eulogy of one worthy gentleman, who encouraged agriculture: if you desire it, I will endeavour to hold the pen whilst I sketch out the character of another, who well deserves to be delivered to posterity, as a *gentleman* conspicuous for all the *virtues of a country life*, and whose eulogy will therefore appear with propriety in the *Museum Rusticum*. I remember, *I am a son*; but you may, with more reason, apprehend, that I cannot hold the *pen* steady enough to draw his striking character as full as it ought, than that I shall use the pencil to *colour too highly**.

This task, however, must be assumed (if you desire it to be at all assumed) when I am a little more composed, and on a paper larger than the remains of this sheet.

In the mean time I must avow, that however common it may be for eldest sons to smile beneath the shelter of an hat slouched at the death of fathers, it is, I believe, universally allowed by those who know me, that I truly lament the necessity of no more subscribing myself,

GENTLEMEN,

East-Newton, Your obedient, humble servant,
June 4, 1765. THO. COMBER, jun.

P. S. I was never able to look into *Tully* till this day.

* If Mr Comber will send us the eulogy of his late father, of whose public spirit and patriotic retirement we have more than once heard, it shall have a place in our work; but we must entreat him not to make it too long. E.

NUM.

NUMBER CVI.

To the Editors of the MUSEUM RUSTICUM.

GENTLEMEN,

I Take the liberty of recommending to your notice, and for insertion in your work, some excellent directions for raising flax, calculated, it is true, chiefly for the meridian of Scotland; but, if I am not mistaken, all your readers, who have any concern in raising or preparing flax, will find profit in reading these directions.

They were distributed, some time since, in many parts, by order of the commissioners and trustees for fisheries, manufactures and improvements in Scotland, being made out, for the benefit of the country, by some of the trustees officers of great practice and experience in flax-raising.

As this is the case, I have no doubt but you will readily consent to their being preserved in your excellent repository.

It grieves me to think that the inhabitants of this part of the united kingdom should be so backward in communicating to you the result of their experience in agriculture and manufactures; though we are greatly behind-hand with England in these matters, still do we know many things worthy of being recorded in your work.

I should not, indeed, have noticed your having received only one letter from Scotland, had I not seen it mentioned in the account given by the authors of the Critical Review of your Third Volume. The writer of this article very judiciously mentions several manufactories which might furnish matter for your collection; and as a communication of knowledge is absolutely necessary, if we ever mean to arrive at perfection, I hope my countrymen will retrieve their lost time, and give you such accounts of the progress
of

of arts and agriculture in this northern corner of the kingdom, as may raise a laudable spirit of emulation, and occasion still greater improvements to be made. Perhaps I may soon myself trouble you on this subject.

I am, GENTLEMEN,

Your very humble servant,

Edinburgh.

A NORTH BRITON.

Directions for raising Flax.

Of the Choice of the Soil, and Preparing of the Ground for Flax.

A skilful flax-raiser always prefers a free, open, deep loam, and all grounds that produced the preceding year a good crop of turneps, cabbages, potatoes, barley, or broad clover, or had been formerly laid down rich, and kept for some years in pasture.

A clay soil, the second or third crop after being limed, will answer well for flax; provided, if the ground be still stiff, that it be brought to a proper mould, by tilling after harvest, to expose it to the winter frosts; and that a little sharp dung, such as pigeons, sheep, or horse dung, or ashes, be spread upon the ground immediately before sowing.

All new grounds produce a strong crop of flax, and pretty free of weeds. When a great many mole-heaps appear upon new ground, it answers the better for flax after one tilling.

Flax-seed ought never to be sown on grounds that are either too wet or dry, but on such as retain a natural moisture: and such grounds as are inclined to weeds ought to be avoided, unless prepared by a careful summer fallow.

Before sowing, the bulky clods should be broken, or carried off the ground; and stones, quickenings, and every other thing that may hinder the growth of the flax, should be removed.

Of

Of the Choice of Lintseed.

The brighter in colour, and heavier the seed is, so much the better : that which, when bruised, appears of a light or yellowish green, and fresh in the heart, oily and not dry, and smells and tastes sweet, and not fusty, may be depended upon.

Dutch seed of the preceding year's growth, for the most part, answers best ; but it seldom succeeds if kept another year. It ripens sooner than any other foreign seed. Philadelphia seed produces fine lint and few bolls, and answers best in wet cold soils. Riga seed produces coarser lint, and the greatest quantity of seed. Scots seed, when well wonned and kept, and changed from one kind of soil to another, sometimes answers pretty well ; but should be sown thick, as many of its grains are bad, and fail : it springs well, and its flax is sooner ripe than any other ; but its produce afterwards is generally inferior to that from foreign seed.

Of Sowing Lintseed.

The quantity of lintseed sown should be proportioned to the condition of the soil ; for if the ground be in good heart, and the seed sown thick, the crop will be in danger of falling before it is ready for pulling. From eleven to twelve pecks, Linlithgow measure, of Dutch or Riga seed, is generally sufficient for one Scots acre ; and about ten pecks of Philadelphia seed, which, being the smallest grained, goes farthest.

The time for sowing lintseed is from the middle of March to the end of April, as the ground and season answer.

It ought always to be sown on a dry bed.

Of Weeding Flax.

It ought to be weeded when the crop is about four inches long. If longer deferred, the weeders will so much break and crook the stalks, that they will never,

perhaps, recover their straightness again; and when the flax grows crooked, it is more liable to be hurt in the rippling and swingling.

Quickening grass should not be taken up; for, being strongly rooted, the pulling of it always loosens a deal of the lint.

If there is an appearance of a settled drought, it is better to defer the weeding than by that operation to expose the tender roots of the flax to the drought.

How soon the weeds are got out, they ought to be carried off the field, instead of being laid in the furrows, where they often take root again, and at any rate obstruct the growth of the flax in the furrows.

Of Pulling Flax.

When the crop grows so short and branchy, as to appear more valuable for seed than flax, it ought not to be pulled before it be thoroughly ripe; but if it grows long and not branchy, the seed should be disregarded, and all the attention given to the flax. In the last case it ought to be pulled after the bloom has fallen, when the stalk begins to turn yellow, and before the leaves fall, and the bolls turn hard and sharp-pointed.

When the stalk is small, and carries few bolls, the flax is fine; but the stalk of coarse flax is gross, rank, branchy, and carries many bolls.

When flax has fallen and lies, such as lies ought to be immediately pulled, whether it has grown enough or not, as otherwise it will rot all together.

When parts of the same field grow unequally, so that some parts are ready for pulling before other parts, only what is ready should be pulled, and the rest should be suffered to stand till ready.

The flax-raiser ought to be at pains to pull, and keep by itself, each different kind of lint which he finds in his field; what is both long and fine, by itself; what is both long and coarse, by itself; what is both short and fine, by itself; what is both short and coarse, by itself; and, in like manner, every other kind by itself,
thát

that is of the same size and quality. If the different kinds be not thus kept separate, the flax must be much damaged in the watering, and the other succeeding operations.

What is commonly called under-growth, may be neglected as useless.

Few persons that have seen flax pulled are ignorant of the method of laying it in handfuls - a-crofs other, which gives the flax sufficient air, and keeps the handfuls separate and ready for the rippler.

Of Stacking up Flax during the Winter, and Winning the Seed.

If the flax be more valuable than the seed, it ought by no means to be stacked up, for its own natural juice assists it greatly in the watering; whereas, if kept long unwatered, it loses that juice, and the harle adheres so much to the boon, that it requires longer time to water, and even the quality of the flax becomes thereby harsher and coarser. Besides, the flax stacked up over year, is in great danger from vermin and other accidents; the water in spring is not so soft and warm as in harvest; and near a year is thereby lost of the use of the lint: but if the flax be so short and branchy as to appear most valuable for seed, it ought, after pulling, to be stooked and dried upon the field, as is done with corn, then stacked up for winter, rippled in spring, and, after sheeling, the seed should be well cleaned from bad seeds, &c.

Of Rippling Flax.

After pulling, if the flax is to be regarded more than the seed, it should be allowed to lie some hours upon the ground to dry a little, and so gain some firmness, to prevent the skin or harle, which is the flax, from rubbing off in the rippling; an operation which ought by no means to be neglected, as the bolls, if put into the water along with the flax, breed vermin there, and otherwise spoil the water. The bolls also prove very inconvenient in the grassing and breaking.

The handfals for rippling should not be great, as that endangers the lint in the rippling-comb.

After rippling, the flax-raiser will perceive, that he is able to assort each size and quality of the flax by itself more exactly than he could before.

Of Watering Flax.

A running stream wastes the lint, makes it white, and frequently carries it away. Lochs, by the great quantity and motion of the water, also waste and whiten the flax, though not so much as running streams. Both rivers and lochs water the flax quicker than canals.

But all flax ought to be watered in canals, which should be dugged in clay ground if possible, as that soil retains the water best; but if a firm retentive soil cannot be got, the bottom or sides of the canal, or both the bottom and sides, may be lined with clay; or, instead of lining the sides with clay, which might fall down, a ditch may be dug without the canal, and filled with clay, which will prevent both extraneous water from entering, and the water within from running off.

A canal of forty feet long, six broad, and four deep, will generally water the growth of an acre of flax.

It ought to be filled with fresh soft water from a river or brook, if possible, two or three weeks before the flax is put in, and exposed all that time to the heat of the sun. The greater way the river or brook has run, the softer, and therefore the better, will the water be. Springs, or short runs from hills, are too cold, unless the water is allowed to stand long in the canal. Water from coal or iron is very bad for flax. A little of the powder of galls, thrown into a glass of water, will immediately discover if it comes from minerals of that kind, by turning it into a dark colour, more or less tinged in proportion to the quantity of vitriol it contains.

The canal ought not to be under any shade; which, besides keeping the sun from softening the water, might make part of the canal cooler than other parts, and so water the flax unequally.

The

The flax-raiser will observe, when the water is brought to a proper heat, that small plants will be rising quickly in it, numbers of small insects and reptiles will be generating there, and bubbles of air rising on the surface. If no such signs appear, the water must not be warm enough, or is otherwise unfit for flax.

Moss-holes, when neither too deep nor too shallow, frequently answer well for watering flax, when the water is proper, as before described.

The proper season for watering flax is from the end of July to the end of August.

The advantage of watering flax as soon as possible after pulling, has been already mentioned.

The flax being sorted after rippling, as before mentioned, should next be put up in beets, never larger than a man can easily grasp with both his hands, and tied very slack, with a band of a few stalks.

The beets should be put into the canals slope-ways, or half standing upon end, the root-end uppermost. Upon the crop-ends, when uppermost, there frequently breeds a deal of vermin, destructive of the flax, which is effectually prevented by putting the crop-end downmost.

The whole flax in the canal ought to be carefully covered from the sun with divots; the grassy side of which should be next the flax, to keep it clean. If it is not thus covered, the sun will discolour the flax, though quite covered with water. If the divots are not weighty enough to keep the flax entirely under water, a few stones may be laid above them; but the flax should not be pressed to the bottom.

When the flax is sufficiently watered, it feels soft to the grip, and the harle parts easily with the boon or show, which last is then become brittle, and looks whitish. When these signs are found, the flax should be taken out of the water, beet after beet; each gently rinsed in the water, to cleanse it of the nastiness which has gathered about it in the water; and as the lint is then very tender, and the beet slackly tied, it must be carefully and gently handled.

Great care ought to be taken that no part is overdone; and as the coarsest waters soonest, if different kinds be mixed together, a part will be rotted when the rest is not sufficiently watered.

When lint taken out of the canal is found not sufficiently watered, it may be laid in a heap, for twelve, eighteen, or twenty-four hours, which will have an effect like more watering; but this operation is nice, and may prove dangerous in unskilful hands.

After the flax is taken out of the canal, fresh lint should not be put a second time into it, until the former water be run off, and the canal cleaned, and supplied with fresh water.

Of Grassing Flax.

Short heath is the best field for grassing flax, as, when wet, it fastens to the heath, and is thereby prevented from being blown away by the wind. The heath also keeps it a little above the earth, and so exposes it the more equally to the weather. When such heath is not to be got, links, or clean old lee ground is the next best. Long grass grounds should be avoided, as the grass growing through the lint frequently spots, tenders, or rots it; and grounds exposed to violent winds should also be avoided.

The flax, when taken out of the water, must be spread very thin upon the ground; and being then very tender, it must be gently handled. The thinner it is spread, the better, as it is then the more equally exposed to the weather: but it ought never to be spread during a heavy shower, as that would wash and waste the harle too much, which is then excessively tender, but soon after becomes firm enough to bear the rains, which, with the open air and sunshine, clean, soften, and purify the harle to the degree wanted, and make it blister from the boon. In short, after the flax has got a little firmness by being a few hours spread in dry weather, the more rain and sunshine it gets, the better.

The skilful flax-raiser spreads his first row of flax at the end of the field opposite to the point from whence the most violent wind commonly comes, placing the root-ends foremost: he makes the root-ends of every other row over-

over-lap the crop-ends of the former row three or four inches, and binds down the last row with a rope; by which means the wind does not easily get below the lint to blow it away: and as the crop-ends are seldom so fully watered as the root-ends, the aforefaid over-lapping has an effect like giving the crop-ends more watering. Experience only can fully teach a person the signs of flax being sufficiently grassed; then it is of a clearer colour than formerly; the harle is blistered up, and easily parts with the boon, which is then become very brittle. The whole should be sufficiently grassed before any of it is lifted; for if a part be lifted sooner than the rest, that which remains is in great danger from the winds.

A dry day ought to be chosen for taking up the flax; and if there is no appearance of high wind, it should be loosed from the heath or grass, and left loose for some hours, to make it thoroughly dry.

As a great quantity of flax can scarcely be all equally watered and grassed, and as the different qualities will best appear at lifting the flax off the grass, therefore at that time each different kind should be gathered together, and kept by itself, that is, all of the same colour, length, and quality.

The smaller beets the lint is made up in, the better for drying, and the more convenient for stacking, housing, &c. and in making up these beets, as in every other operation upon flax, it is of great consequence that the lint be laid together as it grew, the root-ends together, and the crop-ends together.

Of keeping Flax after it is grassed.

Nothing needs be said here, but that if the flax is to be stacked, it should be set in an airy place, upon a dry foundation, such as pob-middings, or the like, and well covered from the weather; and if housed, the floor must be dry, and the house well aired and water-tight.

General Remarks.

Persons unskilful in flax-raising frequently neglect altogether the sorting of the flax, which ought carefully to be done

done at the three following different times, to wit, when pulling, after rippling, and when lifting it off the grass; the consequence of which neglect is, that very different kinds being mixed together, it can neither be watered, grassed, nor scutched equally. They neither prepare proper canals nor water. They make the beets for watering a great deal too large, bind them very hard, and compress all their lint so close together in the water, trampling it down to the bottom, and putting large stones, seals, or logs above it, that the hearts of the beets cannot be half watered, or not at all, when some of it is perhaps too much done. They frequently take it out of the water after it has been there a certain time, without examining whether it be underdone or overdone. They lay it too thick upon the grass, and upon long grassy meadows, by which means some of it is tendered and rotted. In taking it off the field, they lay root-ends and crop-ends together, or, as is commonly called, heads and thraws. Lint so managed must come out very ill in the dressing; and the fault is generally, but very unjustly, laid to the lint-mill, which must destroy what is well watered before it can clean the ill-watered part of the same handful. And thus it happens, that the ends are frequently beat away in the scutching, when the middle is not well cleaned, the ends of a beet being well watered, perhaps too much so, when the heart of the beet has scarce felt the water. Such inequality in the watering of the lint appears very remarkably as it lies upon the field, the middle of the rows then generally appearing of an higher colour than either of the ends.

N U M B E R C V I I .

The true Culture of Flax in Switzerland, containing many useful Hints, which may be highly advantageous to the British Flax-Grower.

GENTLEMEN,

IT is undoubtedly of great importance to the trade of these kingdoms that the method of cultivating flax should be rendered as perfect as possible; for the quantity of linen cloth

cloth made in the several parts of the king's dominions, is not easily conceived, much less particularized.

This being the case, it has been to me matter of surprize, that I have hitherto, in your collection, seen so few important, and really useful, letters on this subject. Surely the flax-growers are as capable of writing an intelligible letter, as those who are employed in other branches of agriculture. I cannot then account for their backwardness in communicating to you the many useful observations they may, nay must, have made in several years experience.

As I am very fond of every thing that has any relation to agriculture, I have lately read all that has yet been published of a work called Foreign Essays on Agriculture and Arts, and have found in it many useful pieces: I cannot, however, think that the compilers of that work have done you justice in their address to the public; for I presume it is your work they mean, when they mention a periodical work which is confined to domestic husbandry only.

I always apprehended that the *Museum Rusticum* was intended generally to promote the improvement of our agriculture and manufactures by all laudable means: it could not then be intended that the improvements made from time to time in foreign countries should be excluded from your plan. If the compilers of the above work mean that you do not insert many translations from foreign languages, I agree with them in the propriety of it, though, I think, even these may sometimes be admitted. But the true way of giving to your readers the knowledge of any foreign improvements or practices of husbandry you may think worth their attention, is by making abstracts of the accounts: this your correspondents may easily do, without encroaching, or occupying too much space in your work.

With this view I now send you an abstract of a piece written by the very sensible and ingenious Mr. Tschiffeli, who may, with great justice, be called the father of the oeconomical society established at Berne in Switzerland.

The subject of this piece is the culture of flax; and I am pretty certain that it contains instructions which

many of your readers will be very glad of having conveyed to their notice.

In his directions for the choice of seed, he says it should be of a bright shining brown colour, not flat, but thick and plump; should crackle much when cast on live coals, and should sink to the bottom almost as soon as thrown into water.

With respect to soils, this writer observes, that any may do for flax, provided it is not too wet, or too stoney, and has not too much sand or gravel mixed with it: some, however, are to be preferred, particularly black earth, neither too strong nor too light; and, in general, strong land is to be preferred to light.

To prepare grass-grounds and pastures for sowing flax, M. Tschiffeli lays down the following rules.

The land should, by the end of July at latest, be turned up in small furrows, about two inches deep. Early in the month of September, a heavy harrow should, in dry weather, be drawn over the field, in order to pulverize the soil; and the month following, if the land is not in great heart, it should have a good dressing of dung, which, being first regularly spread, should, in dry weather, be ploughed in to the depth of six inches at least, with narrow furrows, leaving the field rough all the winter.

In the following spring this gentleman observes, that as soon as the ground is dry, the land should have a good harrowing; and about the middle of April, which is in Switzerland the season for sowing, it should, in dry weather, have its third ploughing, somewhat deeper than the second; and, if the weather should not immediately afterwards be favourable for sowing, the land should the same day be harrowed down smooth.

When flax is to be sown on a fallow, the three usual ploughings are to be given, observing only that every ploughing is deeper than the last; and the dung should be buried by the last, leaving it rough during the winter, and managing it as above in the spring.

When

When flax is sown the second year after a fallow, the land being dunged the preceding year, and in good heart, no manure will be necessary; but immediately after harvest it must be ploughed about two inches deep, to prevent the weeds from growing and impoverishing the soil. As soon as any weeds afterwards make their appearance, it must be well harrowed with heavy harrows, and about Michaelmas should be ploughed in narrow furrows, about six inches deep, lying rough during the winter season. The following spring the ridges should be harrowed down, and afterwards laid smooth with smaller harrows, being in April ploughed for the last time.

Flax, M. Tschiffeli remarks, thrives best upon land that has the preceding year borne a crop which shaded the ground, and prevented the weeds from growing; therefore good flax is seldom got after rye.

This writer very justly observes, that the quantity of seed to be sown should be proportioned to the nature and condition of the land, never less than two, nor more than three, bushels to the acre. Light land should be sown earliest, but always after the dread of white frosts is over, and never in rainy weather, or when the ground is wet: a mild day is best for this purpose, when the wind is not in the north-east, and dew may be expected in the evening.

It is best, our sensible husbandman says, to begin to plough for sowing after noon, the harrow following close at the heel of the plough. A little before sun-set, the seed is to be spread, best at three casts, and the work left in this state till the next morning, when, without fail, the seed must be covered with light harrows, or strong rakes. If the soil is rather light, and the spring likely to be dry, it will be best to roll the land; and if it was not manured before the winter, some very rotten dung may be spread after the seed is harrowed in, and before the field is rolled.

It is better to use no dung at all than that which is not well rotted; soot and ashes, hogs or cows urine, are good

manures for flax, or in fact almost any thing that will not carry weeds on to the land.

When flax is grown to the height of about four inches, it may safely be weeded; but the precautions taken in Switzerland on this occasion are worth notice. There the work is carefully executed, but with as much expedition as possible, the weeders going bare-footed into the field, and working as much as they can, either sitting or lying down, heaping the weeds, and carrying them away every time they leave off working. The weeders should also, if possible, always face the wind, by beginning at the corner of the field to which the wind blows, as in this method the flax will rise the sooner; and the work should never be done in rainy weather, or when the ground is wet.

If the flax is to be propped, the best time to do it is at the time of weeding. To prop flax, is to fix supporters, about the size of a man's finger, branched a little at the top, and about three or four feet long, at the distance of every three feet.

Flax should be pulled in dry weather, in general, when the foot of the stalk begins to turn yellow, though the seed should not be quite ripe. If the crop is not all of equal ripeness, the ripest should be separated, as, if all were to be grafted together, the unripe part would be rotten before the other was sufficiently grafted: it is also best to pull, though at one time, the longest separate from the shortest. When it is all pulled, it must be spread on grass-ground, or on a stubble, the crop-end of the stalk being laid to the south, that the seed may ripen the better.

M. Tschiffeli is of opinion, that when the quantity is large, it is best to separate the seed by threshing as soon as it is got in, in the following manner. The beds must be made pretty thick, the crop-ends of the stalk touching the wall of the barn; and over the feet of the stalks a heavy plank is to be laid, to prevent the flax from being scattered about in threshing. The wall, by confining the
the

the workmen, will prevent them from striking too hard, and thereby damaging the flax.

If the quantity of flax is small, it may be rippled in the ordinary way, observing only that the handfuls be not too large. When the seed is separated, it must be laid on a cloth, exposed to the sun for several days; and afterwards it should be kept in a very airy place; but must be stirred every two or three days for three weeks. It may be kept in this condition two or three years, without the least damage; but when once this seed is deprived of its capsule, it will scarcely ever keep above a year.

When the flax has been rippled, it must again be laid, but thinner than the first time, on a grass-field that has been about a fortnight before mown, being spread, if possible, in dry years on damp ground, and in rainy years on dry land, but never on wet meadows. It must at this period be carefully turned every other day, if the weather is wet, or the dews heavy.

The time the flax is in grassing, depends on the coarseness or fineness of the staple, the heat and the cold, dryness and wetness of the weather; but if, in bruising betwixt your fingers, the top of the stalk when it is dry, the harle or bark separates easily from the woody part or boon, and this last is not tough, but brittle, the flax should be taken from the ground, in order to be carried under cover as soon as it is dry.

The best method of drying flax for braking, this accurate writer says, is to dig a hollow place in the earth, two feet deep, three wide, and from twelve to fifteen feet long, lining it with stone, over which, at the height of about four feet, is fixed a griddle, or grating, consisting of small poles, securely made fast to four or six piles, or stakes, driven into the ground.

The most proper fuel, we are told, for drying the flax, is either charcoal, or well-dried turf, as well because they give an equal degree of heat, as on account of their not producing much of either flame or smoke.

When

When the workmen begin to brake the flax, they must go on briskly; for it should be done whilst it is hot from the grating, and should be effected by an equable motion, beginning at the crop-end *.

In this manner does the sensible and patriotic Mons. Tschiffeli say that flax should in his country be cultivated and managed; and, if I mistake not greatly, the method might, with very little variation, be to advantage adopted in the British islands.

I should be glad, for my part, to have all the good foreign practices in husbandry laid before the English farmer: if experience convinced him his own methods were to be preferred, his reason would prompt him to abide by them; yet have I the greatest reason in the world to think that he would frequently find it to his advantage to change his modes.

The method of cultivating *sainfoin*, which plant is undoubtedly a great improver of land, we entirely owe to foreigners: the same may be said of *clover* and *lucerne*. Will any one tell me, that the whole world is not greatly indebted to the Marquis de Turbilly for publishing his experiments in improving land? He is doubtless the Tull of France, and has laid a more lasting foundation for future fame, than either Turenne or Condé ever had it in their power to do.

Agriculture in France was expiring; the funeral pile was raised; but, when fire was put to it, unexpectedly a Turbilly arose out of the ashes. May he long flourish as a citizen of the world; and when his glass is spent, may he be succeeded by others with souls as enlarged as is his own!

Mons. Tschiffeli is the Turbilly of Switzerland: he planned, and I might say, even founded, the Berne society: he has long been a practical husbandman, and continues to

* It may be of use to some of our practical readers if they compare M. Tschiffeli's method of cultivating and managing flax, with that described in the last article: perhaps each method might be improved from the other. E.

to make a proper use of the fortune Providence has bestowed on him. So far is he from being self-interested, that he generously gives *gratis*, to such of his poor neighbours as cannot afford to buy them, samples of whatever curious seeds he may have, and they may be inclined to cultivate.

We have, thanks be to heaven, many patriotic husbandmen in England; men who understand agriculture in all its branches, and who are no churls of their knowledge; of which truths your work is an unanswerable proof.

I am, GENTLEMEN,

Kent,

Your humble servant,

June 17, 1765.

AMILCAR.

N U M B E R C V I I I .

Of Flax-Seed sown on Potatoes.

GENTLEMEN,

WE cannot multiply in too great a degree the methods, in which a farmer can cultivate those crops that are to assist him in paying his rent: for this reason I was extremely well pleased when a public reward was advertised in Dublin for such person as should sow flax on potatoes, and save the greatest quantity of seed from a given proportion of land.

I suppose there is scarcely a farmer in this kingdom but who every year plants potatoes, though it were only for the sake of supplying his family with them during the season of winter. Now I am well satisfied, that if such farmers knew that they could have two crops in the room of one, they would be glad to adopt so advantageous a method of culture.

I find, by an advertisement in Faulkner's Journal, that Mr. Rochford, of James-Town, in the Queen's County, sowed

sowed in the beginning of April, 1764, eight quarts of New-York flax-seed on one acre of potatoes, from which he had last season one hundred and fifty-six quarts of very good seed, and at the same time a large crop of potatoes, the last not being in the least hurt by the flax growing amongst them.

Now, as your work is read by many in this country, it would be of great service if the above gentleman would in a letter inform you, and through you the public, of his particular method of management with respect to this crop; for instance, what was the nature of the soil, whether he laid on any manure, and if he did, of what kind; what tillage the land had before the potatoes were planted; what crop the land is now under, and whether it is likely to be good; and in what manner his potatoes were planted, with whatever other information he may think necessary to make the affair as clear and intelligible as possible.

I may, perhaps, in future, trouble you with some of my own methods of husbandry, but shall at this time conclude, being,

GENTLEMEN,

Your very humble servant,

Rosecommon,
May 15, 1765.

AN IRISHMAN.

END OF VOLUME IV.

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